

Running head: EXAMINATION OF A WAREHOUSE FUNCTION

Executive Leadership

An Examination of the
Los Angeles County Fire Department
Warehouse Function
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Abstract

The problem investigated was inefficiency in the Los Angeles County Fire Department (LACoFD) warehouse function. The research purpose was to examine the existing LACoFD warehouse function and available warehousing methods. Through the use of descriptive research, questions about effective warehousing characteristics, LACoFD stakeholder warehouse-related challenges, and the design of other government agencies' warehouse operations were answered. Research was carried out through interviews, review of others' processes, and literature review. The results showed the importance of having a well-planned, although ever-changing, warehouse function. Recommendations were made to emphasize the importance of managerial warehouse support, appropriate warehouse staffing and policies/procedures, and the need for a professional and thorough study of the LACoFD supply warehousing system.

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Introduction

In recent years, the responsibilities of the fire service have continued to expand and change. While society now demands more from these first responders, the related demands on an organization's administrative and support responsibilities have also increased. For the Los Angeles County Fire Department (LACoFD), these necessary changes include ensuring Department personnel are provided with the supplies and equipment they need to meet the challenges of the multi-hazard risks facing the residents it serves. The many new and evolving tasks performed, ever-changing computer technology, as well as the additional regulations and requirements put upon the fire service have changed the tools needed by LACoFD personnel.

The growing size of the LACoFD and its responsibilities have affected all areas of the Department, including its supply warehouse. As do all the areas of the LACoFD, its warehouse must satisfy many needs with overall effectiveness and consistently high-quality customer service. The inventory of supplies and equipment required to fight fire, rescue ocean swimmers, perform prevention inspections, provide emergency medical services, and maintain fire stations and other administrative sites evolves as user needs change. The access to these various tools must be consistent and dependable.

The determination of the types and numbers of tools the LACoFD personnel require to successfully carry out their jobs is a challenging task. Many questions must be asked when making the purchases of these tools and ensuring product availability. Should price play a part when choosing the right tool for a task? At what point should each item in the warehouse stock be replenished? Does a new product have a short or long shelf life? Will a new product be needed seasonally, or all year? Can the warehouse be changed to ensure service excellence?

The research problem is that there is inefficiency in the LACoFD warehouse function. As a result, the LACoFD is not maximizing its warehouse productivity, effectiveness, or customer service. Are customers able to get supplies and equipment when they need them? Is the warehouse stock maintained so that back orders are avoided and do not affect product availability? Is the warehouse performing as well as it could be?

The research purpose is to examine warehousing methods and the existing LACoFD warehouse function to determine ways of improving and maximizing the efficiency of the LACoFD warehouse to ensure it provides the right tool at the right time to the right LACoFD customer. Descriptive research will be utilized to answer the following research questions through interviews of key representatives of other government agencies who experience similar warehousing needs, interviews of key LACoFD employees involved in the warehouse function as managers and staff in the warehouse, interviews of LACoFD warehouse customers, and an analysis of literature related to warehousing. The research questions are:

1. What are the characteristics of an effective warehousing function?
2. What challenges do LACoFD warehouse employees and managers experience in their job?
3. What challenges do LACoFD employees encounter as customers of the Department's warehouse function?
4. How have other government agencies designed their warehouse function and what challenges do they experience?

Background and Significance

The LACoFD employs more than 4,600 people, and its Fiscal Year 2007-08 operating budget is just over \$902 million. The Department has a jurisdiction covering more than 2,300 square miles, and provides fire and life safety services to over 4.1 million residents---one out of

every nine Californians. Its broad responsibilities include 165 fire stations in the unincorporated area of the County and in 58 cities, in addition to Santa Catalina Island and 72 miles of California coastline. Primarily funded as a Los Angeles County Special District through property tax revenue, the responsibilities of, and the services provided by, the LACoFD have continued to change during its over 80 years as an organization (See Appendix A). An example of a significant Department service change was the 1994 addition to the LACoFD of the County's ocean lifeguard responsibility, after it had been managed by the County's Beaches & Harbors Department for decades. (More than 45 million people visited Los Angeles County beaches in 2006.) Another significant change has been the increased LACoFD role in providing emergency medical and fire prevention services to the communities it serves. The involvement of the Department's Urban Search and Rescue Team (FEMA CA-TF2) during the last ten years in the nation's various domestic disasters also represents a shift from the more traditional public service provided through firefighting.

Response to these and other major service shifts created the need for additional and improved methods of meeting the diverse and unique responsibilities of the LACoFD. The services required by the millions of residents and visitors served by the Department continually increase. The changing demands made on the LACoFD personnel related to events such as the 1994 Northridge Earthquake, the 1992 Civil Unrest in the City of Los Angeles, and various devastating firestorms, as well as severe winter rainstorms, have left the public dependent on the Department in ways not traditionally considered part of the fire service. With these changing demands came the need for different and/or additional types of equipment and supplies to be used by employees assigned at over 400 LACoFD worksites. The Department's mission

“...to protect lives, the environment, and property by providing prompt, skillful, and cost-effective fire protection and life safety services” has not changed, but has often been redefined over time.

Because of the need for the LACoFD to provide so many services and meet so many additional requirements, many areas of the Department continue to change. One of these areas of change has been its warehousing and distribution of supplies and equipment. While the LACoFD warehouse function has changed since its facility was built in 1970, it has not been able to maintain a consistent level of high-quality productivity. During the last several years, as the warehouse stock has often been dynamic, the work methods used and the responsible managers have also been changing.

The LACoFD supply warehouse is located in Pacoima, California. It is 17,100 square feet of office and warehousing space. There are 24 budgeted employee positions assigned to various warehouse workgroups: Receiving, Distribution, Data Entry, Purchasing, and Inventory Control. One of the positions is assigned as the Warehouse Manager. The warehouse operates Monday through Friday, and is also staffed additional hours during long-term, emergency incidents. While the warehouse inventory value varies from day to day during the fiscal year, the reported inventory value “as of June 30th” has been about \$2.0 million each of the last eight fiscal years. The warehouse stock currently includes hundreds of items including office and medical supplies, as well as firefighting, kitchen, and maintenance supplies. Specifically, the warehouse purchases, stores, and distributes various items, including, but not limited to, shovels, helmets, ladders, splints, boots, envelopes, flatware, pencils, batteries, forms, hammers, blood pressure cuffs, floor wax, bottled drinking water, and wrenches. Additionally, there is outside storage space for a small number of stock items such as 55-gallon drums of motor oil.

LACoFD warehouse customers order supply items in writing based on descriptions and pricing from the Department's on-line warehouse catalog. Those orders go through various levels of written approval via various Department worksites before reaching the warehouse for processing. These supply orders are then processed for pick-up by or delivery to the LACoFD customer. (Parts and specific supplies needed for the LACoFD apparatus/vehicle fleet, aircraft, computer assets and components, and many construction and plumbing supplies are maintained elsewhere and are not part of the supply warehouse inventory system.)

There are many components of the warehousing function, and some are more challenging to achieve than others. If these challenges are not met appropriately, perceived inefficiencies can only worsen. For example, maintaining the warehouse inventory through timely and accurate purchasing affects the way warehouse stock is stored and distributed. Customer order fluctuations due to seasonal or workload changes can also affect the Department's ability to successfully maintain an appropriate warehouse inventory. Lack of sufficient and proper training for warehouse employees, as well as system and human error, affects the overall warehousing and supply distribution process. Warehouse employees are required to understand concepts and terms unique to the warehousing task such as "inventory discrepancy," "cycle counts," "unit-of-measure conversions," "shrinkage," and "back order." Not only must they understand these concepts, but they need to be able to include them in their work on a daily basis. If the employees are working without proper training and understanding of required tasks, the result may be an ineffective use of the most important warehouse resource: the people working there. Only with successful employees can inefficiencies be minimized.

Ensuring that customers get their supply orders accurately and in a timely manner, as with any customer-related task, is important to maintain a high level of quality customer service. When customers become frustrated with untimely deliveries or back-ordered requests,

they can lose confidence in the warehousing system, and this lack of confidence can cause customers to duplicate orders and/or circumvent the established ordering system. Those conditions can affect the customers' budgets and unnecessarily increase Department costs related to the warehouse function. These types of cost increases do not reflect the most effective use of LACoFD resources or the appropriate and intended use of public funds.

Most critically, it is important for LACoFD employees to have the proper equipment and supplies to perform their jobs successfully. Without the right tools to perform their job, LACoFD employees cannot maximize their productivity, maintain the Department's operating budget, or serve the public in the manner expected of them (Federal Emergency Management Agency, United States Fire Administration, National Fire Academy [FEMA, USFA, NFA], 1999). If the warehouse function is not running effectively, the consequences can affect many other areas of the Department. An inefficient warehouse function has far-reaching effects on an organization such as the LACoFD. While it is not always obvious how the warehouse affects the workings of the Department, its effects are always crucial. If the warehouse employees are unable to fill the orders submitted with the requested items and within the anticipated delivery timeframe, the warehouse customer and, ultimately, the public can be negatively affected.

In the past, the Department looked for ways to improve the warehousing process, and initiated various efforts to find the ideal combination of warehouse employees and warehousing methods. The Department improved its warehouse security efforts, altered the ways warehouse stock is purchased and stored, and focused on changing storage and distribution methods to keep up with perceived customer needs. Concentrated efforts were made to maintain full staffing at the LACoFD warehouse, to organize new supply distribution systems, as well as improve inventory systems, and to enhance the overall reputation of the warehouse function overall.

But how does the LACoFD know if these changes truly resolved problems at the warehouse?

What is the cause of warehouse inefficiency? How does the Department establish an efficient warehouse function?

The research problem is important to the author as a responsible LACoFD manager and a California taxpayer, because it is essential the LACoFD utilize its resources as effectively and efficiently as possible---including the employees who work in the warehouse, as well as the equipment and supplies purchased for, stored in, and issued from the Department's warehouse. It is critical to the author that both the emergency and non-emergency LACoFD employees perform at a high-quality level using the various, proper tools that each assignment requires. If the performance of LACoFD employees is weakened, revenue may be lost, inspections can be flawed, employee injuries can occur, budgets may be exceeded, tools and other equipment can fail, but, most tragically, lives and property may be lost. Unfortunately, the role of a fire service agency's effective supply warehouse is not commonly in the forefront as an agency goal, perhaps because it does not contribute in a more obvious way to traditional fire service objectives.

As the third unit, Developing Self As A Leader, of the National Fire Academy's Executive Leadership course explains, it is important for the involved LACoFD managers to apply the appropriate leadership skills to an organizational problem such as those affecting its supply warehouse. Effective leaders are both transformational and transactional leaders (Federal Emergency Management Agency, United States Fire Administration, National Fire Academy [FEMA, USFA, NFA], 2005). Leaders must motivate, communicate with, and support their employees in the most applicable and effective ways possible, while specifically considering each employee group. The LACoFD warehouse employees may be highly productive for different reasons than their lifeguard, accountant, or firefighter coworkers. Weaknesses in the LACoFD warehouse function may have occurred because of past decisionmaking methods used

in relation to the warehouse, as described in the fourth unit of the course (i.e., Developing Decisionmaking Skills). By not making consistently relevant and careful decisions which may bring about change for employees and Department work units, the outcomes may change during the decisionmaking processes. When decision outcomes are unintentional and unexpected, the effects of change on an operation may not be as positive as planned. The results may not be appropriate (FEMA, USFA, NFA, 2005).

If the Department warehouse function runs smoothly and cost-effectively, such success supports all five of the USFA operations objectives by enhancing the proficiencies of LACoFD employees in their many roles working in emergency medical services, administration, ocean lifesaving, prevention, and fire suppression.

The need to effectively establish and maintain the LACoFD warehouse most specifically relates to the fourth USFA objective, which emphasizes the importance of the Department's objectives to be better equipped to handle the ever-changing, multi-hazard environment of Southern California in the 21st Century. Also, an ongoing LACoFD goal to enhance its warehouse function closely supports the fifth USFA objective by emphasizing the timely and appropriate response to the increasing demands and expectations put upon the Department as the fire service continues to change.

This research examines the role of the LACoFD warehouse in the overall operation of the Department and how it can be changed to improve departmentwide operations. The information gathered will be used to ensure the strength of future decisions and changes to be made related to the warehouse function. Additionally, the research will be used to ensure the LACoFD warehouse function is more effectual through the resulting recommendations. The examination looks at the expectations the LACoFD has for its warehouse function and the various methods through which those expectations can be met. The research will be made to ensure the

warehouse function contributes as much as possible to the success of the many LACoFD responsibilities. This investigation was achieved using descriptive research, which included interviews of key LACoFD personnel and representatives from outside agencies, as well as a review of published information on various topics (i.e., management, organizational change, inventory, warehousing, and business logistics).

Literature Review

“Warehousing is an essential group within a materials management organization” (Smith & Tompkins, 1988, p. 49). Warehousing means the process of storing large quantities of supplies, materials, and/or equipment in a systematic manner so the items can be more readily available for distribution when needed. As far back as our earliest known history, man and even parts of the animal kingdom, have engaged in the gathering and storage of food, saving the excess for times when food was scarce (Ackerman, 1977). Ackerman further explains that even in the Bible warehousing was mentioned as critical to the success of mankind. Over many decades, warehousing developed and changed as transportation systems (e.g., the railroad, air carriers) evolved. Early warehousing has so changed as to become a complex, diverse, and important component of the industrial world. As warehousing progressed, so did the related business functions of purchasing, customer service, pricing, and product costing.

As Frey (1983) described, warehousing and distribution account for one of the largest group of employees in the nation. Smith and Tompkins (1988) reported that warehousing is more than five percent of the nation’s gross national product. Most organizations which sell and/or distribute a product, whether in government or private industry (e.g., manufacturers), find themselves involved in, and dependent upon, warehousing. Ironically, however, warehousing is often not as well understood as other business responsibilities such as finance, marketing, and manufacturing (Frey).

As Powell (1976) explained, for many organizations, warehouse stock represents a significant and costly resource investment. A warehouse function is as important to an industrial firm as it can be to a government agency. In fact, warehousing problems can sometimes be as challenging as complex sales or labor management issues (Powell). The responsibility for successful change to storage/distribution of goods is achieved by a warehouse operation designed specifically for the organization and customers it serves (Schmidt & ten Hompel, 2007).

A warehouse function must be planned around the organization's framework and its customer needs, as well as its own overall operational efficiency. The technical structure and arrangement of a warehouse must be tailored to be operationally feasible and to be successful in the organization's aggregate system (Schmidt and ten Hompel, 2007). It is important for a warehouse manager, for example, to consider the entire organization when making changes to the warehouse function. This can be challenging when it is sometimes natural for a warehouse to become specialized and functionalized, and forget that it is part of a whole, and not an end in itself (Warman, 1971). Warehouse managers, Warman recommends, exploring warehousing problems and solutions, must ascertain how the resulting changes may affect the entire organization.

As organizations differ from one another, so do their warehouse operations. No matter the organization it serves, every warehouse will have the same basic functions: receipt of goods and goods acceptance, safe storage of stocked items, and retrieval, packing, and shipping of customer orders (MGT of America, Inc., 2006; Schmidt & ten Hompel, 2007). As further described by Schmidt and ten Hompel, the optimal warehousing system is achieved when every customer order is prepared completely and in a timely manner with minimal resources under dynamic conditions.

Optimizing each aspect of an overall warehousing system can be unexpectedly challenging. Even more, perhaps, than in other areas of an organization, each element of a warehouse operation is absolutely dependent upon the others for its success. The ultimate warehouse can be described as having adequate space to maintain the stored items, appropriate tools and appliances, proper task arrangement to facilitate loading and unloading of stock items, an effectual, logical layout of the various assignments, and suitable security and loss prevention measures. Similarly to all other areas of an organization, a warehouse function must have clear and meaningful goals. As reported by Ernst & Whinney (1985), the objectives of a warehousing operation can be summarized as: (a) meeting customer service goals; (b) controlling commodity inventory, considering stocking levels and shrinkage; and (c) deploying warehouse resources, such as labor, equipment, and storage capacity, in an efficient and cost-effective manner.

But how does an organization actually establish its optimal warehouse function?

Close review of the specific goals of an individual organization should present the various ways its warehouse can succeed. Organizational philosophy and style, economic needs and restrictions, and the material characteristics of an organization are affected by its dynamic environment (Smith & Tompkins, 1988). As such, the warehouse function, as an integral part of the institution, is similarly affected. The organization, including its warehouse, is in a state of constant change (Smith & Tompkins). The issues that arise when executing warehouse operations not only include the engineering problems associated with the warehouse building, but more importantly are the challenges and problems associated with the goods kept in the building and the way the warehouse operates (Powell, 1976).

The business goals of the organization generally establish the warehouse function. The ideal warehouse plan for a manufacturing firm is not likely the same as the plan needed by a government agency such as the LACoFD. The limits put upon each type of warehouse are very

different, as are the decisionmaking processes related to the each organization. The purpose of a government agency is simply public service (Ghere, 2002). The objective of the warehouse public servant, Ghere further reports, is to maintain public trust while delivering quality customer service. These objectives do not necessarily include maximizing company profit. Ghere reports that if the public servant cannot maintain public trust---as well as the confidence of its customers---the public and/or the warehouse customers can become so involved in affecting the warehouse operation that the ability of the warehouse employees to deliver quality service can become impaired. As an example, when customers lose confidence in the warehouse operation, their ordering patterns may change. Customers may order excessively to ensure they always have on hand what they might need, even if they order more than they actually need. This is sometimes referred to as hoarding, and it affects the available warehouse inventory, and the timing of orders to warehouse other customers (Smith & Tompkins, 1988). It perpetuates customers' mistrust of the warehouse function, and challenges the quality of overall warehouse customer service. This kind of skewed ordering negatively affects the processes throughout the warehouse system.

A review of a warehouse function includes an evaluation of the warehouse commodities. Such a review includes the characteristics of the various stock items, where the goods come from and how they are delivered, what happens to the items in the warehouse (i.e., how long will they be stored and where), and the ultimate destination and reason for the goods (Warman, 1971).

A supply warehouse such as that of the LACoFD represents a significant investment in not only the stock commodities, but in organizational resources. The importance of successful resources are significant whether the organization is a government agency or a commercial business (Powell, 1976). The governmental warehouse manager's focus on customer service seems to conflict with the important goals of operating within a finite budget with established

resources (Frazelle, 2002). A review of the efficiency of a warehouse function covers a surprisingly long list of warehousing characteristics, and is more challenging a task than many managers anticipate when making improvements (Smith & Tompkins, 1988) (See Appendix B). Because of the unexpected complexity of a quality warehouse function, many organizations find that improving their warehouse is not as easy as they believed. Many warehouse managers know it is important to provide quality service even under difficult situations. What they find as a bigger challenge is to provide service in a consistently efficient manner (Jenkins, 1968).

Many executives find that the distribution of goods from a warehouse seems simple from the outside, but is actually not a simple undertaking. In reality, because of time and service quality requirements, as well as budget-related limitations and many external influences, the seemingly easy process has evolved into a distinct, complicated function that must be completed in a controlled and optimized environment (Schmidt & ten Hompel, 2007). Schmidt and ten Hompel describe further that even the decision to purchase and implement a storage system is difficult because there are so many parameters to consider: the number of different and changing stock items, item dimension and weight, item stock quantity, required storage methods, space requirements, and retrieval strategies. The government warehouse manager must accomplish these challenges all the while keeping customer service as the primary objective.

Warehousing is a much-neglected area of business study (Warman, 1971). Frequently, the warehousing function does not get the managerial attention it needs to perform at an optimal level. An organization usually does not realize the critical part a warehouse plays in the overall success of its business system. Warehousing, as perceived by many business managers, does not carry with it the glamour or mystique of other business areas such as marketing and finance (Frey, 1983). Many managers, Frey further explained, operate under the philosophy that any “ninny” could be held responsible for the warehouse function. It can, therefore, be difficult to

determine how to make changes which can improve warehouse productivity and the value the warehouse adds to the organization's success. Traditionally, a warehousing operation has been thought of as simply a necessity, but rarely as an exciting potential for improving the organization overall (Ernst & Whinney, 1985). Particularly in a government agency, because it does not focus strongly on profit and cost reduction, the warehouse rarely achieves more than a utilitarian status (Ernst & Whinney).

Specialists explain that many managers feel warehousing is costly to an organization without adding value; therefore, they hesitate to invest significantly into such an unimportant organizational component. The organization's warehouse is too often considered just a necessary evil. Because the productivity and success of a warehousing operation is difficult to measure, managers find it difficult to invest resources in it because they cannot ascertain the return on their investment (Blanding & Way, 1973). For example, it is difficult to compare the cost of the warehouse before and after the addition of major automated equipment or other costly resource changes. Ironically, while quality customer service is the main goal of a warehouse, often customer service improvements increase warehouse costs (Emmett, 2005). As a result, change related to customer service improvement does not occur, and the warehouse suffers in the areas of productivity, employee morale, and customer confidence.

Even when an executive conjures up a mental image of the organization's warehouse, the image is often negative. The warehouse is often regarded as a dark, dingy, and untidy place manned by unskilled laborers with poorly kept records often sited a great distance from its customers (Warman, 1971). Because of this unfortunate image, those same executives separate themselves from the warehouse function, which they consider unworthy of their attention and resources. More often than other organizational areas, the warehouse has been considered a pasture, of sorts (Warman). Often when a long-time employee was almost ready for retirement,

Warman further described, he/she was transferred to the warehouse where he/she could spend the end of a career in a job which was not difficult and one which called for little intelligence.

In spite of the fact that for hundreds of years warehousing has often been heeded as a costly requisite, keen managers have only recently started to notice how the effects of warehouse inefficiencies can affect many others areas of an organization. Perhaps this change is the biggest warehousing challenge faced by the executives of an organization. Yet, such change comes slow to this vital, yet obscure, business support function. The need to continually provide good customer service with limited resources in an increasingly dynamic environment is an onerous achievement (Ernst & Whinney, 1985).

The demands put upon a warehouse process can be affected by changes in customer needs, product demand, and technology. This results in changes in objectives, policy, procedure, and productivity in the warehouse. Even changes in managerial style and the status of the economy may reach out to deliberately, or accidentally, affect the organization's warehousing function (Smith & Tompkins, 1988). As Blanding and Way (1973) present, to most managers the perfect warehouse is no warehouse. Very often managers want to change work methods, workflow, and/or equipment and space utilization to improve the productivity of their warehouse operation (Frey, 1983). However, as Frey further explains, the most effective way to improve warehouse productivity may well be through work measurement. Setting workload standards and measuring employee performance can help to maximize the productivity of a warehouse function.

Measuring the effectiveness of warehouse performance can be expensive and time-consuming for any organization (Smith & Tompkins, 1988). It can involve the observation of warehouse activity to determine, for example, the appropriate staffing levels for each particular task. Because warehousing is largely an intangible service, "quality service" can be difficult to

define and difficult to measure, and the affects of warehousing on the organization overall can be even harder to quantify (Brewer, Button, & Hensher, 2001; Glaskowsky, Heskett, & Ivie, 1964).

As experts discussed, there are many measures which are popularly used to evaluate warehouse activity including pounds shipped, orders processed per day, task accuracy, and unit loads per hour (Frazelle, 2002; Smith & Tompkins, 1988). However, these experts agree that utilizing these types of measures can be misleading since so many variables can affect employee performance (Glaskowsky et al., 1964). The dollar value of an item may not correspond to the energy and time expended to receive, store, and/or ship that item. Another example of how measurement can be misleading is when a warehouse manager evaluates warehouse success based on storage density. As described further by Frazelle, if storage density is too high it may mean over-crowded warehouse conditions rather than a well-stocked warehouse. Thus, resulting statistical data may not result in relevant problem solutions.

The measurement of warehouse success is most often difficult to interpret because the services provided are intangible. Changes to technologies, procedures, organization structure, and warehousing concepts pose new challenges for a government agency warehouse in its efforts to improve efficiency and public service (Brewer et al., 2001). However, if an organization can develop an appropriate mix of measures for warehouse activity, it can also determine the need for personnel changes, how to budget its expenditures more realistically, and how best to establish changes to work methods (Piasecki, 2003). Evaluating employee work activity effectively, regardless of the methods used, can result in many valuable findings. Through such evaluations, warehouse employees may have a more clear understanding of their responsibilities, recovery from task delays can be improved, supervision can be enhanced, and the warehouse manager can better anticipate the consequences of making future changes to the warehouse function (Smith & Tompkins, 1988).

Management review of control reports of employee performance compared to established work standards must be done carefully. Even with the use of statistics, there can be much subjectivity involved in conclusions to be drawn. If the results are too complicated, such may create mistrust from warehouse employees, and if the results are too stringent, they can demoralize the employees (Jenkins, 1968). Jenkins also reports that when an organization has spent its high cost resources to develop standards, they must follow that process by utilizing performance reports to plan for change.

“The specialized techniques for the warehousing of goods and for controlling their movement are closely allied to the processes and procedures which are necessary to run a factory” (Warman, 1971, p. 41). Warehousing is more often compared to engineering than to other functions, explained Warman, because of the frequent need to make changes to the operation. As previously described, there are many reasons for a warehouse to change. Personnel changes, stock changes, and changes to organizational goals continually affect how to maximize the productivity of a warehouse. Each warehouse function has a distinct purpose and each affects the flow of goods into and out of the warehouse building. While it is difficult to measure warehouse success, it is necessary to develop the collection of statistical workload data so that changes to the process, minor or major, will be made appropriately (Warman). Change made without considering its effects on the overall warehouse process may only weaken the flow of goods through the system. This kind of analysis has shown managers, year after year, that warehousing is becoming more and more important to the success of a manufacturing firm or a government agency such as the LACoFD.

Because the value of warehouse stock can be very high, it is important to realize the close link between financial accountability and the movement of goods in and out of the warehouse. Unfortunately, as reported by Piasecki (2003), many organizations neglect the importance of

accounting for the stock in the warehouse. The inventory count of stock items must be feasible and accurate, and accounting for losses must also be done. Often, most of the cost of an item comes before it arrives at the warehouse. While the dollar value of a warehouse loss can be high, the loss prevention responsibility is not always well-respected. Without well-supported documentation and/or computer systems to account for inventory, the warehouse can become the weak link in a supply chain to the customers of an organization like the LACoFD.

When warehouse managers are deciding what stock to purchase, how to store the stock, and how to efficiently distribute the stock, it is important they also determine how to secure the valuable commodities which pass through the system. A loss of warehouse stock not only affects the budget of an organization, it affects the customers (Emmett, 2005). When product is lost or mishandled, the stock availability is negatively impacted, and customer service is weakened. The loss of stock can be from fire, accidents, theft, and inventory damage. The warehouse manager must prevent loss to maintain customer satisfaction and a balanced supply budget (Smith & Tompkins, 1988). Warehouse loss is again dependent on an effective inventory/accounting system as a way of monitoring the valuable warehouse assets. Warehouse managers must realize that loss control and asset production are responsibilities for which they are accountable (Smith & Tompkins).

As the value of an effective warehousing system slowly becomes clear to the management of an organization, the more complex the system should seem. However, many managers incorrectly assume that warehousing is simple, and so the decisionmaking processes related to the warehouse function are not always complete. The fact is, the more complex the organizational challenges are, the more complex and diverse the warehousing processes should be (Brewer et al., 2001). So, the responsible managers must ask themselves an important question: How do we measure the need for warehousing change?

Excellent warehouse customer service is often intangible, and so it is hard to define and difficult to measure (Brewer et al., 2001). Correspondingly, the impact of poor warehouse customer service on the organization overall can be equally difficult to quantify so that weaknesses can be accurately improved. Changes in technology, policy, and organizational structure present new challenges to a warehouse manager on a continuing basis. Because there are always so many variables affecting the warehouse function, the possibility of “one best way” to establish performance standards and measurements is precluded (Brewer et al.).

The need for change in a warehouse function can sometimes be identified in an analysis of measured activities. Measured activities help promote a more prompt response to a problem or weakness in a business system (Brewer et al., 2001). With the use of these measurements, a problem can be solved more quickly and productivity has a chance to improve. A simple example of measurement in a warehouse operation would be item order frequency. Without the benefit of a crystal ball, a warehouse manager must be able to predict with accuracy customer order fluctuations and be prepared to accommodate changes. In a diverse and complex organization, such as the LACoFD, predicting customer needs can be difficult to do. It is more efficient to have credible order records, for example, which can help the manager anticipate order fluctuations and respond to customer needs appropriately.

The success or failure of a warehouse operation can be measured by a myriad of indicators. Those indicators can include supply delivery flexibility, stock replenishment lead time, customer demand, supplier viability, and purchase prices. It is particularly challenging for an organization to plan for and guarantee success when its warehouse system is often unable to control how its productivity is impacted (Chopra & Meindl, 2001). Particularly, a government warehouse function can be limited and guided by federal, state, and local laws which become more and more difficult to deal with almost on a daily basis (Ghere, 2002). In an effort to

maintain the public trust in a highly restricted business, the warehouse function operates in an often dynamic, yet structured, environment.

Managers who are responsible for a warehouse are learning to realize that operational improvements will not be obtained without an accurate understanding of the warehouse network structure and its costs, as well as its overall strengths and weaknesses (Ernst & Whinney, 1985). The correct evaluation and choice of warehouse systems calls for a systematic and general knowledge of the function's performance (Schmidt & ten Hompel, 2007). One of the ways to accomplish an effectual evaluation of a warehouse function is through effective communication between and amongst executives, managers, warehouse employees, and the warehouse customers (Ackerman, 1977; Glaskowsky et al., 1964). Communication can suggest the weaknesses of a warehouse function, as well as the strengths, and bring about needed change which may not otherwise occur in a timely manner.

The communication to and from a warehouse is key to its success. The strength of a warehouse is dependent upon the accurate and timely transmission of information, the retention of accurate recordkeeping, and the use of standardized and easily understood documentation (Ackerman, 1977). There are many written forms of communication into, within, and going out of a warehouse operation. Each invoice, packing slip, approved customer order, and freight bill must be utilized accurately and appropriately to ensure the warehouse functions effectively (Jenkins, 1968). It is important to ensure these various forms of specialized communication are maintained at all levels of the organization to effect quality customer service from the warehouse function.

Effective communication up and down the warehouse employees' chain of command will help evaluate the effectiveness of proposed and implemented changes through actual performance and experience, as well as the use of work measures (Frey, 1983). The need for

increased communication and information flow in a warehouse operation is critical to its success (Ernst & Whinney, 1985). Emmett (2005) explains that much of what passes as communication in a warehouse function is actually only going “one way” and it often goes unchecked to ensure its effectiveness. Warehousing goals will almost always include maximizing the accessibility of stock items, maximizing the protection of those items, and, of course, maximizing the effective use of space, labor, and equipment (Warman, 1971).

“Warehousing is a people business” (Ackerman 1977, p. 139). The most valuable and costly warehouse function resource is its employees (Emmett, 2005). A warehouse is entirely dependent upon two groups of people: its customers and its employees. The performance, accuracy, and morale of these unique employees affects the overall success of the warehouse and its customers. The warehouse customers, Ackerman further explains, do not focus on the standardized warehouse equipment and facilities, but rather they focus on the service they receive. It is important, therefore, that a warehouse manager maintain service excellence through the success of the warehouse employees (Ernst & Whinney, 1985). Most warehouse managers are challenged to process more orders in less time, with a lower margin for error, with less skilled labor (Frazelle, 2002).

As the warehouse function becomes more and more important to the organization, so does the effectiveness of the warehouse workforce. It is crucial to develop the workforce, and its communications and other support systems, in the most relevant and effective manner possible. Often, these aspects of a warehouse are in a constantly changing state, making true success a moving target. To varying degrees, it is essential for warehouse employees to have written policies and procedures to guide them through their jobs when necessary. Briggs (1960) discussed the importance of written direction and how organizations that have taken the time and care to prepare such are generally more efficient than those who do not. Written procedures help

to maintain continuity, provide constant training, increase employee efficiency, and decrease operational costs (Briggs).

As in all areas of a business, the company culture---formal and informal---affects those working in a warehouse. Through an organization's vision, mission, and/or goals the formal culture affects its employees (Emmett, 2005). As well, the organization's policies and written procedures lay the foundation for workforce success. However, the warehouse manager must also closely consider the organization's informal culture to be sure it is not in direct conflict with organizational success. The warehouse manager needs to provide high-quality customer service and ensure the employee culture climate is enhancing overall employee motivation and performance (Emmett). There are many ways to change and improve the culture and environment of a warehouse. While it is critical to process accurate customer orders, it is equally important to determine the best methods to use to achieve that goal. Emmett reports how vital employee motivation can be to the success of a warehouse through a close review of employee trust, support, training, and responsibility. An effective and appropriate blend of each can be the key to an effectual warehouse workforce.

It is important that a warehouse manager monitor workplace safety, maintenance and housekeeping, training availability, and ergonomics (Frazelle, 2002). Organizations, Frazelle describes, which have a low employee turnover rate and the most effective workgroups are those who have a strong focus on these workplace issues. In a dynamic environment such as a supply warehouse, this focus is obviously challenging. The warehouse workforce is made up of many specialties and each depends on the other.

A close look at the responsibilities of warehouse employees shows they are involved in many complex responsibilities, in addition to basic receiving, storage, and distribution. These responsibilities involve supervision, financial planning, recordkeeping, research, forecasting,

supply and equipment requirements, inspections, system data entry, safety, security, reporting, space utilization, and the determination of accurate and timely customer service (Air National Guard, 2007; Today's Military, 2007). It is imperative the employees in a warehouse be both capable and willing to perform their assignments in the most successful way possible. Whether the employee is responsible for data entry, clerical work, or for receiving and accounting for new deliveries, each employee has an important role and that role cannot be diminished (Ackerman, 1977). Many experts write about how the warehouse workplace needs to be carefully managed so that the employees can be truly successful in their unique environment (Warman, 1971).

If it is found that change is needed in a warehouse operation, the method of implementing and choosing change can be as important as the change itself. A warehouse function may need changes to equipment, procedures, tools, documentation, or personnel. Each type of change may be handled differently from the other, and should be done in a systematic problem-solving approach (Blanding & Way, 1973). Strategically planned change for the sake of improvement is more successful than that which is done piecemeal. It is generally agreed that a warehouse function will experience many changes in its continuing quest toward efficiency and service excellence. The warehouse system should be reviewed regularly to ensure it is running as expected and to allow for any necessary reorganization which will enhance its overall performance. Additionally, the warehouse manager needs to determine how organizational change outside the warehouse function and how non-warehouse managerial decisions may result in changes to be made in the warehouse (Ernst & Whinney, 1985).

Organizational changes may affect warehouse storage space requirements, the potential need for automation, accounting for warehouse costs and performance, and the warehouse policies and procedures that apply to the warehouse workforce (Ernst & Whinney, 1985).

One of the most basic problems a warehouse manager can face is deciding whether or not an item needs to be warehoused. Warman (1971) reports this decision can be made by considering the specific characteristics of the purchased goods, the source of the goods, what will actually be done with the goods at the warehouse, and the final destination of the goods.

When evaluating the overall effectiveness of a warehouse operation, most executives will eventually consider outsourcing their warehousing responsibilities and/or the automation of warehouse equipment and tools. On the surface these major changes may seem to be an ideal solution to many warehousing problems; however, this may not necessarily be true.

The development of a more efficient warehouse function is not easily accomplished. Unfortunately, there is no single method of establishing the ideal system which meets the warehousing goals and needs of an organization. It is becoming more prevalent to incorporate computer-aided management tools into a warehouse plan because the scope and dynamics of the related processes continue to be more and more complex (Schmidt & ten Hompel, 2007). However, automation, in and of itself, may not be the answer. Automation, combined with the people who use it, is a potential system change which may improve a warehouse function. Unfortunately, some managers believe that because warehouse functions are generally the same from organization to organization, automation which works in one warehouse will, therefore, be equally successful in another warehouse. This is rarely the case.

Introducing automation and computerized tools into a warehouse function must be done carefully to result in truly improved efficiency. The current methods of warehousing goods may seem antiquated; however, automation will not improve the warehouse if it does not lower costs and noticeably improve the effectiveness of the warehouse workforce (Blanding & Way, 1973). Automating warehouse equipment, tools, and reporting/tracking systems can solve problems but can also replace one problem with another. As such, it is important that all aspects of the

warehouse function be considered before the organization makes the investment of expense and time into automated problem solutions (Smith & Tompkins, 1988).

As Frazelle (2002) advises, many managers believe automation is a way to streamline a complex process, and/or make that process more efficient. However, automation is inherently complex in and of itself. If complexity is applied to a complex situation, the result may be complexity squared (Frazelle). Perhaps a process needs to be evaluated and simplified to determine the appropriate application of automation. Bragg (2004) reports a list of major reasons why warehouse automation can fail: alterations and customization to packaged software; inadequate preparation of the organization for the change; intransigent warehouse personnel; lack of proper planning, funding, and testing; little post-implementation review; and lack of project support by top management. It is, of course, crucial to consider the effect of any new system on those who use it and the unavoidable potential for human error (Frazelle). No new automated systems, whether related to the movement of warehoused goods or the tracking of orders and inventory, can perform without being affected by the people who use the system.

Does the organization need to keep its warehouse function, or can someone else do the job better? When managers consider warehouse change, outsourcing the function seems like an easy answer to a complicated problem. But is the outsourcing of such an important function an efficient solution? If outsourcing the function results in relatively lower costs, improved customer service, and the simplification of the process, outsourcing may be an answer (Schmidt & ten Hompel, 2007). From a managerial point of view, the decision to outsource the warehouse operation may be made, right or wrong, to pass day-to-day decision making onto someone else, along with the task of managing the challenging warehouse function (Schmidt & ten Hompel).

Hiring logistics or warehousing services can offer a wide variety of desirable advantages. Greater operational efficiency, access to the use of proven technology, cost reduction, simplified

flexibility, and the reduction of internal managerial responsibilities are advantages to outsourcing which can sell these services to an organization with a need to change (Brewer et al., 2001).

Conversely, however, there can be a price to pay for outsourcing such a vital function. Some of the disadvantages to outsourcing are related to potential increased costs, loss of process control, and an inability of a vendor to meet the unique needs of the organization hiring the services.

It is not uncommon that a compromise between an existing process and outsourced services is implemented by supplementing an existing system with outsourced operations (Brewer et al.).

It is most important to ensure that an organization's needs will be met when considering potential outsourced warehousing services (Frazelle, 2002). In order to ensure that an outside supplier of warehousing services can meet those needs, many questions must be asked and answered in great detail to ensure the services needed will be properly supplied (Emmett, 2005). Questions related to stock items (e.g., size, value, etc.), customer location and order frequency, organizational policies, potential loss of customer communication, and service cost must be clarified and specifically addressed.

In summary, warehousing is in a constant state of change as a result of technology, new applicable laws and regulations, employee and customer needs, and managerial prioritization of the process itself. Managers continue to consider alternatives to maintaining the organization's warehouse in light of this constant change and the complicated challenge to keep up with such a dynamic responsibility. Evaluating the success of a warehouse function is often so complex and difficult that it is ineffectively completed. Warehouse managers realize the survival of the operation is dependent on its ability to change and to do so in a timely manner.

The warehouse workforce has evolved from the ancient role of custodian to being the operators of a complex, critical, and regulated organizational function. The need to manage warehousing activities is a key reason to be able to measure the work done in the often

mysterious environment of warehousing and distribution of supplies. Without the measurement of the work done in a warehouse operation, it is difficult to achieve good and consistent performance. And so, the organization struggles to determine the measurement methods which will reflect the efforts of the warehouse workforce and the areas where improvement may be necessary. Schmidt and ten Hompel (2007) simplified the importance of meeting customer needs through a warehouse system as the right goods at the right time in the right quantity and quality at the right cost to the right location.

What sounds like a very simple goal to achieve is actually a major challenge confronting managers almost universally. The modern manager has fortunately started to recognize the challenge of effective warehousing and the difficult methods of improving the process (Ernst & Whinney, 1985). Experts agree that effective warehousing requires effective planning and management of the operation and, in recent years, managers have started to realize the importance of their warehouse function. The combination of people, equipment, tools, and requirements must constantly come together to continually meet the customers' need for their orders to be filled promptly and accurately every time. Regardless of the type of products or supplies warehoused, the motivation for success, or the many outside variables that affect the process, the mission of a warehouse is always high-quality customer service.

Procedures

The first part of this research process began with a literature examination in the student library at the California Polytechnic University in Pomona, California starting in April 2007. These efforts included reviews of books, journals, reports, and other available written sources, as well as many Internet searches. The purpose of the examination was to answer research question #1: What are the characteristics of an effective warehousing function?

The search of library and Internet sources was focused on subjects such as management, organizational change, inventory, business logistics, and warehousing. The author reviewed sources that discuss establishing a warehouse, making changes to warehousing methods, and the uniqueness and specialization of warehousing.

To answer that same research question, the author performed an on-line search of the National Emergency Training Center's Learning Resource Center Online Card Catalog in May 2007. This search focused on the same topics as the aforementioned library search and included the review of journals, periodicals, and Executive Fire Officer Program Applied Research Projects.

The objective of this literature review was to provide information about the issues and challenges faced by those managing and working in warehouses, as well as about more formal and tested methods of managing a successful warehouse function. The author assumed all literature providers and authors examined gave accurate information and data, and that they were objective and unbiased. Notes taken by the author of literature research findings were categorized by topic in order to use the information in a systematic way to document the characteristics of effective warehousing. Based on the information found, these topics included: problems specific to warehouse functions, the warehouse work environment, warehousing tools and costs, measuring warehouse success, warehouse safety, and alternatives to traditional warehousing.

The second part of this research process included interviews held in June through September of 2007 of three groups of individuals whose warehouse and supply ordering experience related to the author's research. The three rounds of interviews included participants from these groups: LACoFD internal stakeholders who are or have been directly responsible for the warehouse function, LACoFD internal stakeholders who prepare/approve warehouse supply

orders (i.e., warehouse customers), and representatives from other government agencies who manage a warehouse function for an organization similar to that of the LACoFD. All three rounds of interviews were completed following the literature review, which assisted the author with asking more meaningful questions based on the study of issues relevant to the research problem, purpose, and related questions. The first round of interviews involved various LACoFD personnel and was conducted to answer research question #2: What challenges do LACoFD warehouse employees/managers experience in their job?

The first group of participants in this initial round of interviews was chosen by the author because of their specific Department warehouse-related areas of responsibility. Twenty-three of these employees are assigned to the various workgroups at the LACoFD warehouse, and one is the Warehouse Manager. The Division Chief responsible for the Materials Management Division (MMD), of which the warehouse is a section, was also interviewed. Lastly, the two LACoFD chief deputies were also included in this first round of interviews because of their managerial responsibilities related to the warehouse function. (The Deputy Chief responsible for the warehouse was not interviewed for this research because he had been in the position for a very short and temporary period of time.) It was important to obtain input from these employees about potential warehouse changes because of their LACoFD assignments and their direct involvement in the current warehouse function. By getting input from these employees, the author could also begin to get buy-in for potential warehouse function changes (Phillips, 1983).

The second group of interview participants in this first round of LACoFD interviews was unplanned. The relationship to warehousing of this second LACoFD employee group was discovered by the author during the initial aforementioned research interviews. In recent years, these three employees had various responsibilities related to the Department's warehouse. These employees had been given temporary special assignments related to potential warehouse reform

because of their existing Department role (i.e., Compliance Officer, operations Battalion Chief, operations Fire Captain). These unique warehouse assignments were made for various reasons as a result of the LACoFD efforts to improve the warehousing function. The author felt these three employees may have unique insight into the warehouse operation and that their input may enhance the research results.

This first round of LACoFD employee interviews was arranged two to three weeks in advance via an e-mail request sent by the author to each individual. (In the case of the warehouse employees, the e-mail message was sent to the Warehouse Manager, on their behalf.) The e-mail messages explained the reason for the interview request [i.e., the Applied Research Project (ARP) related to the warehouse function], the estimated 30 to 60-minute timeframe of the interviews, and the confidentiality of the interview results. Suggested dates and times were provided in the e-mail message to help make the scheduling process easier for both the author and the interviewee. The date, time, and location of each interview was set at the interviewees' convenience. Once the date, time, and location for each interview was established, a second e-mail message was sent by the author to the interviewees to confirm the appointment and to thank the participant in advance for his/her support of the research. The Warehouse Manager and the MMD Division Chief were interviewed separately from the other warehouse employees. The remaining warehouse employees were interviewed in groups based on their workgroup assignment (e.g., Inventory Control, Data Entry, Receiving, etc.).

The discussion questions for this first round of interviews were based on the author's limited experience with the warehouse function, and on information gathered from the research literature review. There were four different sets of discussion questions and the differences were based on the employees' warehouse responsibilities and related experience (see Appendix C). The author provided a list of discussion questions via e-mail to the various interviewees three to

four days in advance of the interview to give the participants the opportunity to consider the discussion issues prior to the interview appointment.

The intent of these LACoFD employee interviews was to get input from these various LACoFD stakeholders about the warehouse function so that any concerns they had could be addressed as potential changes to the warehouse function (Phillips & Stone, 2002). Because these employees are directly responsible for the warehouse function, their input was especially important. The author assumed the LACoFD participants in this first round of interviews were supportive of the research and of the Department's desire and need to maximize the effectiveness of its warehouse function, and that their responses were made honestly to help ensure the future success of the warehouse.

The second round of LACoFD employee interviews involved representatives of the Department's supply warehouse customers. This round of interviews was conducted to answer research question #3: What challenges do LACoFD employees encounter as customers of the Department's warehouse function? The participants in this second round of interviews were selected as follows: The author sent an e-mail message to the Deputy Chief in each of the three LACoFD Operations Bureaus (i.e., East, North, and Central). In this e-mail message, the author asked for the Deputy Chiefs' support of the research and for each Deputy Chief to designate bureau representatives to be interviewed for the research.

Several designees were selected and the author contacted them to arrange the interviews. In some cases, the interviews were conducted in a group environment at a division or other type of staff meeting. It was critical to get input from these 30 Operations Bureaus employees because most LACoFD warehouse orders come from these three bureaus' 2,900 fire station personnel. Essential buy-in on changes to the warehouse function from this group of employees would be crucial to the success of future changes to the warehouse function. Operations Bureaus

employees represent the biggest group of warehouse customers and may influence warehouse function success in the future. Additionally, four representatives from the Department's Air and Wildland Division were included in this second round of LACoFD interviews because these employees utilize the warehouse function frequently for reasons similar, yet unique, to those of the aforementioned Operations Bureaus employees.

This second round of LACoFD stakeholder interviews was generally arranged two to three weeks in advance via an e-mail message sent to designated individuals. The e-mail message explained the reason for the interview (i.e., the ARP related to the warehouse function), the estimated 30 to 60-minute timeframe of the interview, and the confidentiality of the interview results. Suggested dates and times were provided in the e-mail message to help make the scheduling process easier for both the author and the interviewees. The time, date, and location of each interview was set at the interviewees' convenience. Once each date, time, and location was established, a second e-mail message was sent to the interviewees to confirm the appointment and to thank the participants in advance for their support of the research.

The intent of these interviews was to get input from this group of LACoFD stakeholders about the warehousing function so that any concerns they had could be addressed in considering potential changes to the warehouse function, thereby enhancing the value and relevance of any process changes (Phillips & Stone, 2002). The author assumed the interview participants in this second round of interviews were supportive of the research, and that their responses were made honestly to help ensure the success of any future warehouse changes. Because the interview participants' LACoFD roles and experience with the warehouse function was different from the participants in the first round of interviews, the discussion questions for these warehouse customers varied from the first round of interviews (see Appendix D). These questions were designed for input from the warehouse customer point of view, and, again, were based on the

author's limited experience with the warehouse function and on information gathered from the research literature review. Input gleaned from the first round of LACoFD employee interviews also influenced the discussion questions used in this second interview round. The author provided this separate list of questions to the various interviewees three to four days in advance of the interview via e-mail to give the participants the opportunity to consider the discussion issues prior to the interview appointment.

The third, and final, round of interviews in this research process included interviews with representatives from other government agencies who manage a warehouse which may be similar in size and/or function to that of the LACoFD. The information from these interviews was necessary to address research question #4: How have other government agencies designed their warehouse function and what challenges do they experience? It was important to garner the input from these agencies in order to ascertain warehousing methods that could be used in the LACoFD warehouse and to determine how warehousing challenges may have been previously resolved. The author felt these interviewees may experience similar challenges to those being faced by the LACoFD now and those it may face in the future. Such challenges may include purchasing restrictions and conditions, as well as budgetary and staffing limitations. It is also possible these agencies may have found effective resolutions to issues which may be facing the LACoFD warehouse function. The author wanted to garner ideas for improving the LACoFD warehouse function by reviewing other agencies' work.

A key stakeholder from the following outside agencies was interviewed by the author for this research project during the period August through October 2007:

City of Columbus Division of Fire	Columbus, Ohio
Goodfellow Air Force Base	San Angelo, Texas
Los Angeles County Department of Public Works	Los Angeles, California

Los Angeles County Sheriff's Department	Whittier, California
Los Angeles Fire Department	Los Angeles, California
New York City Fire Department	New York City, New York
Riverside County Fire Department	Perris, California

These telephone interviews were arranged one to two weeks in advance via an initial e-mail message sent by the author to each agency liaison. (In order to interview an appropriate representative of each involved outside agency, the author contacted someone in the agency previously known by the author. These contacts referred the author to an appropriate agency warehouse liaison to be interviewed.) The e-mail message explained the reason for the interview (i.e., the ARP related to the LACoFD warehouse function), the 30 to 60-minute timeframe of the interview, and the confidentiality of the interview results. Suggested dates and times were provided to help make the scheduling process easier for both the author and the interviewee. The time and date for each interview was set at the interviewees' convenience. Once the time and date for each interview was established, an e-mail message was sent to the interviewee to confirm the appointment and to thank the participant in advance for his/her support of the research. The author assumed the interview participants in this third round of interviews were supportive of the research and of the LACoFD's warehouse planning efforts, and that their responses were made honestly to help ensure the future success of the LACoFD warehouse.

A distinct set of discussion questions for the outside agency interviewees was developed based on the author's limited warehousing experience, on information gathered from the research literature review, and on interviewee input from the aforementioned LACoFD stakeholders (See Appendix E). The author provided the list of questions to the various interviewees three to four days in advance of the interview via e-mail to give the participants the opportunity to consider the discussion issues prior to the interview.

The intent of all three rounds of research interviews was to answer research questions by obtaining input about the issues faced by the LACoFD in its efforts to improve the warehouse function, and to help lay out a road map to help direct the future of the LACoFD warehouse function. The information collected from the interviews will be used to create the Department's guidelines for effecting relevant change to the warehouse function necessary to enhance efficiency.

The number of participants in each round of interviews was based on the timeframe of the research project and the availability of the interviewees. The number of interviewees from outside the LACoFD was based on the limited timeframe of the research project and the extent of the research project established by the author.

A limitation on this project was the timeframe during which the research was performed. More detailed research may have been included by interviewing additional representatives from the LACoFD Operations Bureaus and other Department bureaus to potentially obtain additional suggestions for changes to the LACoFD warehouse function. By participating in the research interview process, the unheard LACoFD stakeholders may have felt more buy-in for future changes to the warehouse function. Additionally, there was not enough time to formally observe employees working within the warehouse function for a meaningful period of time. Such observations may have revealed problems the warehouse employees experience related to their job responsibilities, each other, or their customers.

A second limitation of the research was that it does not closely examine the electronic system used by the warehouse employees to track issued inventory, process customer orders, and determine the replenishment levels of warehouse inventory items. This limitation may or may not have affected the author's examination of the effectiveness of the warehouse function.

Another limitation of this research relates to LACoFD employee behavior and culture. The author assumed the Department's employees wanted the LACoFD warehouse to be successful and as effective as possible. The research does not closely address how changes to the 80-year-old LACoFD employee culture affect the warehouse function or how the personal opinions and individual behaviors of its many employees may affect the future success of the warehouse function.

A fourth limitation on this research was that many LACoFD employee interviews were conducted in groups, rather than individually with the author. This interview format may have inhibited the employees' input during the interviews as a result of real or perceived peer pressure or negative consequences resulting from frank question responses.

A final limitation on this research was that the author did not interview individuals who represent the private sector (i.e., non-governmental organizations). Based on the literature review, the author found that much of the reason and motivation for how private industry manages their warehousing operations is focused on cost related to profit (Ghere, 2002). Since the success of the LACoFD warehouse function is not related to agency profits, but rather primarily to customer service and efficiency, the author did not include private industry in this research. According to Ghere, private sector warehouse operations support a capitalist profit-oriented economy, and the government warehouse supports values and services its constituents see as being for the common good. The author realized private industry focuses on customer service, but often from a different perspective than government agencies (Powell, 1976).

Results

Through the use of descriptive research, which included reviews of many written sources, as well as personal interviews, the author found considerable information to answer the four research questions.

Question #1 What are the characteristics of an effective warehousing function?

Through the Literature Review, the author found that a warehouse function is often much more significant to an organization, such as the LACoFD, than most managers realize (Frey, 1983). It is important that warehouse employees are able to receive, store, and distribute equipment and supplies in a way which provides consistently effective customer service.

In the case of a government warehouse, the work of the warehouse employees has a direct effect on the success of the organization which uses the supplies that travel through the warehouse system (Schmidt & ten Hompel, 2007).

A warehouse function is as important as any other business area, such as finance or marketing, but executives usually do not invest resources in their warehouse as thoroughly as necessary (Powell, 1976). Warehousing has been around longer than most business functions, and has changed a great deal in the last 50 years, particularly in government agencies where the relevant technology, equipment, and tools for employees have expanded and changed to create more and new types of customer needs. As such, it is necessary for a warehouse function to be designed to meet the specific and unique needs of the organization and the customers it serves (Schmidt & ten Hompel, 2007). The warehouse function must be considered a critical support operation and an integral part of the organization in order to be successful (Jenkins, 1968).

A warehouse function is very dependent on its people (Ackerman, 1977). The employees in a warehouse must be well-trained, highly motivated, and excellent team players in order to be successful in their efforts to provide effectual customer service. Within the overall organization, the formal and informal warehouse culture needs to correspond with organization-wide goals, and have a vision coordinated with that of the aggregate organization (Ernst & Whinney, 1985). Similarly, the formal and informal culture of the whole organization can affect the way a warehouse performs and, so, these cultural characteristics must be considered when establishing

the mission of the warehouse. When attempting to improve a warehouse operation, many managers find that the warehouse is a more difficult managerial task than they had anticipated (Frey, 1983).

As the warehouse operation becomes important to management, the opportunity to change and improve it becomes more frequent. It is especially crucial, therefore, to implement change carefully and in ways which help warehouse employees adapt effectively to the changes and their new environment. When making changes to warehouse policy and procedures, managers must realize they are affecting a uniquely complex business system which can fail without consideration of the impact of the changes on warehouse employees and on the warehouse customers (Brewer et al., 2001). Even the simplest change can have a significant impact on the warehouse function because its various components are so dependent on each other to be effective overall (Smith & Tompkins, 1988).

The success of a warehouse function is often difficult to measure, except when customers report service dissatisfaction. Customer mistrust of the warehouse function can negatively affect warehouse productivity and, in turn, warehouse customer service. If customer orders are filled timely and accurately, the warehouse has experienced success. In turn, the warehouse employees are more productive, creative, and satisfied. When warehouse employees experience this kind of work environment, they are more likely to provide appropriate customer service, which has the potential for continued improvement (Smith & Tompkins, 1988). As customer service quality stays high, so does the credibility of the warehouse function and the trust its customers have in it as an effectual part of the organization.

Effective communication to and from a warehouse is crucial to its success. This involves not only the incoming orders to be processed, but the reporting functions within the warehouse amongst its employees and those which go out to its customers. Operational reporting needs to

be a useful tool not only to warehouse employees, but to those managers outside the warehouse who make decisions about resource investments into warehouse success (Glaskowsky et al., 1964). The warehouse must have a clear communication connection to the rest of the organization, and it must operate in a way which can be evaluated as a critical function. As the aggregate organization changes, the warehouse must also go forward through successful change.

It is important for warehouse activity to somehow be measurable so that productivity reporting can be used by organizational decision makers when considering further financial investment in the warehouse, and when taking steps to improve the overall warehouse process (Brewer et al., 2001). If the warehouse activities can be measured and the results reported, weaknesses can be more readily identified and improved (Brewer et al.). Credible order processing records can help the warehouse manager maintain adequate stock levels and accurate inventory records, which promotes more effective customer service through the timely filling of supply orders (Chopra & Meindl, 2001).

The accountability for the warehouse stock must be considered an important organizational goal. Accounting for the warehouse inventory in an accurate and meaningful way can also affect how decisions are made with regard to the warehouse function (Jenkins, 1968). Not only is the inventory value important, but an accurate inventory system helps to maintain quality customer service because stock availability is accurately reported. If a warehouse organization can maximize its stock availability, the storage and security of its stock, and its use of space, labor, and equipment, it can meet its ultimate goal of satisfying its customers' needs (Warman, 1971).

Many experts described the potential advantages to an organization of adding automation to its warehouse function as a way of increasing productivity and stock inventory control.

Carefully evaluating potential changes is extremely important to the warehouse function.

Warehouse automation simply for the sake of automation is a recipe for warehouse failure (Ernst & Whinney, 1985). Automating processes in a warehouse must reduce costs and improve customer service in order to be worthwhile (Schmidt & ten Hompel, 2007). A well thought out blend of warehouse employees with automated tools and processes is the best way to add automation to a warehouse (Blanding & Way, 1973). Even appropriate use of automation is not a simple solution to the problems in a warehouse, and so it must be carefully analyzed and implemented (Bragg, 2004).

Because managing a warehouse can be a great challenge, outsourcing the function often seems like the optimal answer to warehousing problems. However, outsourcing the function comes with its own price, both financially and functionally. Outsourcing is popular now more than ever, but needs careful evaluation to ensure its feasibility in an organization such as the LACoFD (Brewer et al., 2001). This kind of major operational change must reduce costs and simplify supply distribution, but, most importantly, it must better meet the needs of the customers than the existing warehouse system (Schmidt & ten Hompel, 2007).

The LACoFD warehouse customers have a very basic idea of an effective warehouse function. Their perception of an effective warehouse function is one that fills customer orders in a timely and accurate manner. These LACoFD stakeholders often did not have a clear and extensive understanding of how a warehouse functions, but still held it to high standards in order to meet their operational needs. These stakeholders felt a warehouse should be able to maintain appropriate stock levels and anticipate customer order behavior through whatever means available, which could include electronic order processing and approving, on-line stock availability, or back order and order delivery status reporting. Overall, they felt that strong communication to and from the warehouse would improve the effectiveness of the supply

distribution process. They wanted to be able to anticipate the receipt of their orders and simplify their ordering process. They often felt the procurement of supplies could be improved by making their orders directly to product vendors and eliminating dependence on the Department warehouse as a supply middleman.

The LACoFD stakeholders who are directly responsible for the warehouse and those who work in the warehouse clearly understand the need to provide customer service excellence through their own productivity and work-related success. They also explained they could offer a more effective warehouse function through operational improvements which would include an improved customer ordering process, as well as the provision of renewed education of the warehouse process to LACoFD managers and other warehouse customers. These LACoFD stakeholders predict that the current warehouse process can be more successful through enhanced warehouse resources, procedural change, and consistent managerial support.

These warehouse-responsible stakeholders reported that an effective LACoFD warehouse is one which can meet the unique needs of its customers in spite of their varying shifts, supply/equipment needs, and varying ordering procedures. They further described it is important for the success of a warehouse function for the warehouse employees to work in a productive environment which supports high morale and precludes their perceived isolation from the rest of the organization.

It is important, they explained, that the warehouse employees work in an atmosphere of cohesive teamwork. That teamwork being amongst and within the warehouse workgroups, as well as with the LACoFD warehouse customers and other coworkers outside the warehouse walls. These stakeholders described the ideal warehouse to be one which is truly an integrated part of the Department where all members are supportive of the others' goals and needs.

An organization, such as they described, would include a stable, supportive structure which maintains all areas of the organization in the best way feasible.

These stakeholders emphasized that their success may be elevated to a consistently effective level through their ability to carry out Department policies which hold all LACoFD employees responsible for appropriate warehouse-related procedures. They stated that an effectual warehouse staff is one empowered to be successful in an organization in which customers and warehouse workers are well-informed, accountable for their efforts, and aware of the critical nature of the Department's warehouse function.

The warehouse staff and managers discussed that a successful warehouse is one which is of an appropriate, realistic size and layout so as to be highly productive, including suitably automated tasks and other applicable resources which meet the Department's goals. They explained that there may be advantages to outsourcing some or all of the warehouse function if such an outside service vendor could meet the unpredictable and inconsistent demands of the LACoFD warehouse customers. These unique customer needs include the requirement to provide around the clock service to the public, as well as the work environment of a fire station, which differs greatly from a traditional Monday through Friday administrative office environment.

The LACoFD Chief Deputies and the three employees who had special warehouse-related assignments similarly described an effective warehouse to be one which is well-planned and whose managers and staff are able to be proactive in their jobs to prevent customer dissatisfaction and other problems. These stakeholders expressed that the success of a warehouse is dependent on not only the warehouse employees, but on the warehouse customers and other LACoFD management personnel who are all responsible to varying degrees for the success of the Department's warehouse function. They reported that warehouse personnel have a

major role in the logistical support of the LACoFD, yet they cannot manage or control what is outside the warehouse, particularly those business practices which may be inconsistent with the goals of a successful warehouse.

These same five stakeholders realize that inefficiencies in a warehouse not only result in warehouse challenges, but also in reduced customer confidence in the warehouse operation. The results of this reduced confidence can perpetuate warehouse inefficiency and a weakened warehouse reputation, and negatively affect the morale of employees throughout the organization, not just of those who work in the warehouse. An effective warehouse operation has clear goals and procedures, a sound inventory and ordering business system, and a positive work atmosphere which fosters noteworthy productivity and accomplishment. This group of managers added that they felt there should be more effort made to enhance the existing LACoFD warehouse function before considering outsourcing the operation.

The feedback from the representatives from agencies outside the LACoFD provided even more insight into the characteristics of an effective warehousing function. They described how crucial it is to consistently provide good customer service and to work closely with their customers. They explained their warehouse is generally successful as a result of effective communication between the warehouse staff and the warehouse customers in relationship to procedures and the supply distribution process. Because they have established effective ordering procedures, as well as a strong inventory control system, they are generally able to fill orders in a timely, accurate manner, thus, succeeding in their operational goals. Since the mission of these organizations' warehouses is primarily to fill customer orders, if they are fulfilling this goal, they are considered effective and successful. In doing so in a consistent and documented manner, they are also able to accurately maintain their warehouse inventory and purchasing records. Generally, the warehouse functions in these agencies are managerially supported and customers

are held accountable for meeting the requirements of the ordering system. This accountability helps to ensure quality productivity of the warehouse workforce and the satisfaction of the warehouse customers.

Question #2 What challenges do LACoFD warehouse employees and managers experience in their job?

These LACoFD stakeholders find various challenges in their jobs, some over which they have little control. They described that they often experienced ineffective communication not only amongst the warehouse workgroups, but also with their customers, managers, and outside agencies, which include shipping companies and product vendors. These stakeholders reported they are frustrated by ineffective communication and wanted to improve it so as to improve the warehouse as a part the overall LACoFD organization. The weaknesses in communication, they explained, come in many formats (e.g., customer order forms, e-mail, telephone calls, etc.) and include the warehouse electronic inventory tracking system. They described being limited by the communication weaknesses in their efforts to provide appropriate customer service. They feel that weak communication perpetuates the negative reputation of the warehouse operation and makes it difficult to effect change. They explained that to improve the warehouse function, not only must the LACoFD managers embrace the need to change the warehouse, but they must support change in procedures and policies which guide the warehouse customers in their ordering and planning processes.

Over many years, the LACoFD warehouse administrative structure has become flexible to a flaw, which has weakened the policies, procedures, and workflow of the warehouse and created inconsistent customer service and dissatisfied customers. These stakeholders find it difficult to work in an unstructured business function which may have been spawned, in part,

from communication weaknesses, and by ineffective decision making by warehouse employees, other Department managers, and, in fact, the warehouse customers.

Since the LACoFD warehouse function has had a negative reputation for so long, it is particularly challenging to reverse the trend. This trend, these employees reported, has created a lack of consistent teamwork and dubious morale. It is difficult for these stakeholders to have buy-in for change which they cannot perceive as beneficial, and the resulting negativity has affected their incentive to make changes to ultimately benefit the warehouse and the entire Department. They further discussed that a lack of positive feedback and group cohesiveness creates a preventable employee challenge, a solution for which cannot be found in a LACoFD policy and procedure manual.

These warehouse stakeholders explained that because the LACoFD warehouse function is directed by a government bureaucracy and many internal controls---which may not be understood or recognized by warehouse customers---the demands of its customers can sometimes be unrealistic for the LACoFD warehouse system as it currently exists. These stakeholders feel, however, the warehouse inventory, reporting, and ordering systems need to be improved so efficiency, warehouse employee and customer satisfaction, and, of course, customer trust and warehouse employee morale can all be improved. With this improvement, a more effective warehouse function should result. The warehouse managers and employees experience a constant cycle of complaints and frustrations from their customers and within the warehouse walls. This cycle, they emphasized, is the biggest challenge they face in their efforts to improve their performance.

These employees made several suggestions during the interviews with the author of ways to employ automation into the warehouse system which they felt may bring about improvement; however, in the same discussion they perceived a lack of organizational support necessary for

such change. These stakeholders found a lack of support from outside the warehouse system to be contributing to an ongoing, long-time negative situation. They described that perhaps the warehouse function needed to be a more respected function and that such could happen with an increased organizational investment by the LACoFD in its warehouse operation. This investment would include not only the potential funding of necessary resources, but the investment of time, interest, and managerial support, as well as the more careful assignment of appropriate and productive personnel resources into the warehouse. Without these kinds of investments, they reported, the LACoFD is actually showing non-investment in the warehouse. These stakeholders emphasized that perhaps the LACoFD warehouse operation is held highly accountable and is closely controlled in an organizational environment which challenges their ability to succeed within those accountability and control requirements. Generally, they do not feel a departmentwide enthusiasm for further warehouse development and improvement from stakeholders inside and outside of the warehouse walls.

Question #3 What challenges do LACoFD employees encounter as customers of the Department's warehouse function?

These customer stakeholders reported there is a consistent and decades-old lack of confidence in the LACoFD warehouse function. They described how warehouse customer service is, at best, inconsistent and unpredictable, and explained that they feel the warehouse process is unreliable. They were unable to explain what causes the delays and problems which result in their lack of confidence in the warehouse operation, and they admitted they were not familiar with the requirements and controls put upon the warehouse function. Their perception of the warehouse operation is that it does not work to meet their needs in an expected manner. They also provided an insight into some of their specific frustrations with the system.

These customers reported there seemed to be a disconnect between their priorities and the priorities of the warehouse function. More specifically, they felt the warehouse system did not make a distinction between “emergency operation” supply orders and orders for such items as office supplies. They were unsure as to whether operational weaknesses emanated from a lack of training of warehouse staff and their customers, or both. Perhaps, they explained, the LACoFD had outgrown the warehouse and so it had become more ineffective over time due to the expansion of the supply and equipment needs of the Department. Fortunately, however, the inefficiencies in the warehouse had not noticeably affected the provision of emergency services to the public because the customers had developed methods of obtaining supplies without being entirely dependent on the warehouse. As an example, these customers have purchased items via the Department Petty Cash process when they felt the warehouse could not provide supplies in a timely manner. Additionally, they had gotten into the practice of over-ordering and so maintaining a mini-warehouse in a fire station or other LACoFD administrative site. They sometimes referred to this as hoarding, and although they admitted it was not necessarily an appropriate way to get supplies or maintain their expenditure budget, it was a creative and necessary evil to ensure they had the supplies/equipment they needed when they needed them.

When asked if they had responsibility for the success of the warehouse, some of these customers responded that they do. The reasons they may be responsible, however, varied. Some felt they were responsible because they did not understand the warehouse function or because the requirements put upon them were unclear. This lack of clarity, they explained, was often the result of unclear requirements and inconsistently enforced guidelines. Others did not feel responsibility for warehouse success; however, these stakeholders felt that the ineffectiveness of the warehouse has driven customers to be creative when obtaining supplies in order to procure the items they need. The Department’s culture, they stated, had made them responsible for

working around the system. The combination of perceived warehouse weaknesses and customer creativity has ensured, they described, that the warehouse weaknesses do not negatively affect the LACoFD operations overall.

These customer stakeholders expressed a need to be able to improve communication between themselves and the warehouse operation. They wanted to be able to check on the status of their orders, any back orders, and general stock availability in a more accurate and straightforward manner. They felt they were not provided an accurate record of their warehouse-related expenditures in a timely manner and, therefore, could not effectively manage their equipment/supply budget. They reported they had difficulty reconciling warehouse supply orders to their expenditure budget. They, however, realized that although the expenditure reports were not prepared by the warehouse staff, the source of the report information was coming from a warehouse system which did not seem adequate for an organization the size and complexity of the LACoFD. They reported their need for the Department to further develop the communication to/from the warehouse in order to meet their customer needs.

These customer stakeholders reported they thought the LACoFD could not eliminate the warehouse function because they needed to be able to have their supplies available any time, day or night, and they were unsure if outsourcing the function would afford them this advantage. They wanted to support positive change to the warehouse function if they could consistently experience benefits from the change. They reported that the warehouse had weakened over many years, and they hoped it would not take as many years to improve it if future enhancement was to occur.

Question #4 How have other government agencies designed their warehouse function and what challenges do they experience?

These representatives illustrated their warehouse functions have the same basic responsibilities as the LACoFD warehouse (e.g., storing, obtaining, and distributing goods), but they utilize some agency-specific methods of warehousing. The warehouse employees are organized into workgroups (e.g., receiving, distribution, etc.) and are cross-trained because the number of warehouse staff members is often limited to a level too low to provide consistently good customer service. No matter the minor or major differences in the methods used, the goal of all warehouses reviewed was to achieve excellent customer service by getting supplies and equipment to their customers accurately and in a timely manner, even if their customers varied from firefighting personnel to members of the military to public works and law enforcement professionals. In some instances, the warehouse employees and managers included some firefighting personnel and, in some cases, the employees were all civilian and/or government employees (e.g., Storekeeper, Warehouse Manager, Warehouse Worker II, etc.).

From agency to agency, the overall indicator of a successful warehouse function was quality service, and these stakeholders explained that the path to this kind of success was through appropriate warehouse managers and staff. The personnel resources were described as the key to warehouse success no matter what other equipment or systems are in place. Each of these warehouse managers explained that the best way to design a warehouse is to ensure the quality of its personnel and then to maintain that workforce through the use of effective communication, providing appropriate training and tools, and, most critically, through consistent managerial support of those employees. They reported the important responsibilities of the warehouse staff to support the agency overall, and that appropriate warehouse staffing is an absolute must.

The interviewees stated that, like other areas of an organization, it is critical that warehouse employees be capable and motivated, and that these staff members be the most appropriate and willing people possible. Warehouse employees need to have effective teamwork

skills, as well as good interpersonal skills. These skills help them perform successfully within the warehouse and with those outside the warehouse (i.e., warehouse customers, managers, and vendors). The interviewees recognized, as experts have explained, that their warehouse may not be getting the executive support it needs to be successful, and so warehouse productivity suffers. Appropriate staffing, space, and equipment were often mentioned as resources which are lacking in their agency. It was not uncommon for these representatives to express that their warehouse function was not as important to agency management as it should be, and that the warehouse employees often felt like they were in a demanding, yet thankless job.

In some cases, the warehouse function is available to its customers at all times, but in most of these agencies, the warehouse is available on a regular basis during traditional business hours (e.g., Monday-Friday, 8:00 a.m. - 5:00 p.m.). This difference in customer versus warehouse employee shifts presents unique challenges for an agency such as the LACoFD and some of the interviewee agencies. Most of these outside agency warehouse managers reported they were comfortable with the way their warehouse was set up. The warehouse function was most often organized by product types (e.g., emergency service stock, office supplies, personal protective equipment, etc.) and they felt this kind of organization contributed to their success. Some interviewees reported that the size of the warehouse did not meet the needs of the agency, and that warehouse layout was sometimes a cause for inefficiency in warehousing processes.

The employee customers of these agencies are held responsible for ordering supplies based on established timeframes and agency-specific formats. Most customer orders are made and approved electronically and these representatives felt their ordering system was adequate to meet warehouse goals. Generally, each agency has established timelines for ordering and delivering supplies, and the customers generally understand the need to follow these policies. For example, in one agency, orders are processed and delivered on a monthly basis. This, the

agency reported, requires the customers to set feasible expectations and to better plan their supply needs. Thus, by providing consistent and predictable processing times, the warehouse maintains a positive reputation and, very importantly, customer trust. These representatives understood and focused on maintaining this customer trust as a business goal, but also as a way to maintain warehouse employee productivity. They described that when customers are satisfied, warehouse employees are more productive and when warehouse productivity is high, the needs of its customers are more likely to be met effectively.

Most of these agencies provide their customers with a list of the available supplies to make ordering easier. They reported these listings were maintained by agency employees, but not necessarily warehouse employees. They reported that customers had no problems deciphering the supply lists in order to provide clear and accurate supply requests. The customer orders and subsequent order approvals are often provided via an automated warehouse-specific ordering system, electronic mail, or facsimile. In some cases, orders can be accepted in more than one format, including, also, hard copies of order forms. Some of these interviewees reported that they have established more than one acceptable format, and those with a formal warehouse ordering system could only accept orders through that system. There was no single method; however, each agency utilized what was most feasible to ensure accurate processing. In some agencies, warehouse employees deliver all supplies on an established schedule, and in other agencies some supplies are delivered and some are picked up by the customer. Of course, in all cases, urgent orders can be processed and picked up at the warehouse.

The agencies utilize the knowledge of subject matter experts and trained buyers to decide which items are to be stocked in their warehouse. Also, in some of the outside agencies, the final approval of each order is made by designated warehouse representatives. This warehouse final approval helps to prevent customers from getting quantities of items in error because of

misunderstanding related to how supplies are issued. For example, if a customer wants three items, the warehouse final review and approval prevents the distribution of three cases of the item instead. This final review also prevents customers from exceeding pre-established stock limits which are put upon some items due to expiration dates, high dollar value, etc.

The representatives of these outside agencies also stated they have warehouse-related challenges similar to those of the LACoFD. All of the interviewees said they did not have enough skilled employees to allow the warehouse to be consistently effective. Often, they stated, they were challenged to get the warehouse staff to stay motivated in their jobs and, therefore, sometimes unable to maintain high-quality customer service. In most cases, they were concerned about low warehouse employee morale and about the best ways to motivate their employees. These warehouse representatives explained their employees needed to work a great number of overtime hours to meet the unique needs of their customers, especially because the regular warehouse operating hours did not match 24-hour customer work shifts.

The interviewees often described that their organization is dependent on an outdated and/or ineffective inventory customer order tracking systems. To increase their ability to provide good customer service by decreasing the number of back orders and increasing timely order processing, they felt a more feasible and effective inventory-related computer system would benefit their agency overall through improved productivity and customer service. They realized there were functional areas of their warehouse that would benefit from the addition of automated/computer-aided tools to streamline some of their processes. A commonly mentioned tool these managers thought would benefit their warehouse operation would be the use of bar code readers used to track customer orders and existing inventory.

These agency representatives were also challenged by their customers when orders are untimely or unclear, or when ordering patterns were unpredictable. One of the reasons for the unpredictable ordering patterns is customer hoarding of excessive supplies and equipment. The interviewees speculated these problems were either the result of a lack of customer planning or a lack of confidence in the warehouse system. The consequences of this type of problem perpetuated itself and was perhaps, a cultural issue that would be difficult to change. These representatives needed customer cooperation to be successful, and in some cases felt it would be beneficial to provide their customers more training and education on the warehouse process and how best to ensure its success.

When asked by the author about other ways to improve their warehouse function, the interviewees reported that changes to warehouse staffing structure and ordering systems may be beneficial to the agency. While they were also considering supply warehouse alternatives such as employee credit cards and having customers order supplies directly from vendors, they realized that such changes may only result in substituting one administrative problem with another. Having customers order directly from supply vendors can create internal control and documentation problems, as well the possibility of eliminating reduced vendor pricing afforded the agency through warehouse bulk orders. In many cases, too, the vendor may not be able to deliver its goods to fire stations because emergency crews may not be at the worksite to accept the merchandise. The elimination of an agency's central supply warehouse, they reported, could create the need for increased storage space at individual customer worksites. Since not all worksites (e.g., fire stations) have such available storage space, the absence of a central warehouse could present a new problem.

Discussion

Through interviews with internal LACoFD stakeholders, as well as with warehouse managers outside the LACoFD, and through the review of related literature, the author validated what others have discovered in the past. That is, the discipline of warehousing is not a simplistic one. The warehouse-related difficulties met by modern organizations are not unique to the LACoFD. Warehousing is a more important organizational function than most managers realize. Many managers believe warehousing is an easy task, when in reality it is not only unique and complicated, but is critical to the success of other organizational functions (Smith & Tompkins, 1988). As such, the LACoFD warehouse needs to be able to perform as an integrated part of the Department (Ernst & Whinney, 1985).

Warehousing is very often an overlooked organizational function, and so suffers as a result of being a misunderstood and segregated group of employees (Warman, 1971). Through the research, the author found the LACoFD strongly parallels what the experts have found about a neglected warehouse. While the LACoFD warehouse has occasionally been the center of attention because of an isolated warehouse-related issue, it does not consistently appear in the Department's long-term strategic plan. Unfortunately, in many other organizations this is also true. As a result, the LACoFD or other organizations may not be investing effort and funding into its warehouse function, virtually setting it up to fail (Frey, 1983). The author found the warehousing-related research intriguing because the author had previously been unfamiliar with the process, other than as a sometimes frustrated customer. It is clear why the complexities and uniqueness of the warehouse function can be so challenging to the LACoFD. The Literature Review revealed how many areas of a warehousing function can be vulnerable to failure or weakness. Through that review and through the research, the author garnered that the common

warehouse vulnerabilities which experts warned against, advised on, or cautioned about are to varying degrees part of the LACoFD warehouse function; thus, the need for change.

What many experts described is that managers expect excellent customer service from its warehouse function, without a corresponding organizational investment in that mission.

Improved customer service often comes at a cost and so the LACoFD must be prepared to pay the price of such customer service excellence (Emmett, 2005). If LACoFD managers do not understand the importance of, and how to achieve the goal of, a truly efficient warehouse, effective and optimal warehouse-related decisions are not likely to be made to the benefit of the Department (Brewer et al., 2001; Schmidt & ten Hompel, 2007).

While addressing the goal of customer needs, LACoFD managers must include the restrictions put upon a public agency warehouse and how its budget must be carefully planned and expended (Frazelle, 2002; Ghare, 2002). The author discovered that organizations, like the LACoFD, managing a warehouse must be aware of the advantage of productivity improvement in their warehouse and its effects on the organization overall (Ghare). Accomplishing this is a bigger challenge than the Department has perceived in the past, and it needs to accept what must be done to ensure the success of the warehouse (Brewer et al., 2001).

Like many areas of the LACoFD, its warehouse function is absolutely dependent on the professional success of its employees. Like the other organizations reviewed, the LACoFD warehouse function involves many specialized tasks and workgroups (Ernst & Whinney, 1985). This naturally leads to the requirement, in an organization like the LACoFD, to emphasize and support the need to foster an effective and appropriate work environment for its employees (Frazelle, 2002; Warman, 1971). There is only one way for the LACoFD, or any other government supply warehouse, to be successful and that is through highly productive and happy employees (Ernst & Whinney).

The Department's warehouse employees are dependent on effective communication coming into the warehouse, within the warehouse, and leaving the warehouse (Ackerman, 1977). The author found, during the research process, that the many versions of communication involved in the LACoFD warehouse function are often inconsistent and inefficient. As many experts described and the author's researched confirmed, the results are inconsistent productivity, low warehouse employee morale, and dissatisfied LACoFD warehouse customers.

An effectual warehouse function is dependent on consistently effective teamwork, not only inside the warehouse, but between the warehouse staff and its customers and organization managers (Ackerman, 1977). As experts, including Jenkins (1968), reported, LACoFD needs to ensure its warehouse employees are the most appropriate employees for each job and that they provide sufficient training and coaching to those employees to support their individual and team success. In these efforts towards improvement, the Department also needs to consider the formal and informal culture of not only the warehouse, but the LACoFD overall (Emmett, 2005). Emmett further described the importance of aligning the warehouse culture to the aggregate Department culture towards enhancing warehouse productivity and LACoFD customer satisfaction.

The author found that the most important improvements to be made to the LACoFD function should be through the warehouse employees and, then, its customers. In the past, this may not have been the path taken and so decision making related to the warehouse may not have been optimized. Experts from the Literature Review and the research interviewees, explained the importance of motivating, encouraging, supporting, and empowering warehouse employees to ensure their success and that of the overall warehouse function (FEMA, USFA, NFA, 2005).

The supply and equipment distribution process carried out by the LACoFD warehouse staff is measured to the extent customers spend their annual budget on items stored in the

warehouse. However, there may be other methods of measuring LACoFD warehousing activities, and then using the results to identify areas of high performance and/or areas which may benefit from procedural or methodology change (Glaskowsky et al., 1964). For LACoFD managers to be convinced to invest more time and resources into their warehouse function, they may need to see a measurable return on their investment (Blanding & Way, 1973). What the specialists from the Literature Review warned, however, is that it is often difficult to measure warehouse success because so much of the warehouse activity, as well as its primary mission of customer service, is intangible and often perceived as subjective (Brewer et al., 2001). The author found that if the LACoFD will implement activity measurements, such will have to be done carefully, and in a well thought out manner, to ensure the measures will be meaningful and create positive change (Glaskowsky et al.; Jenkins, 1968). With the discriminating implementation of even a selected few measurements and managerial reports, the productivity and effectiveness of the LACoFD can be enhanced, as described by Blanding and Way.

It is important for the LACoFD to make deliberate and effective change to its warehouse function in order to meet its desired warehouse goals. This endeavor would require an ongoing review of the various warehouse activities, as well as the processes used by the LACoFD warehouse customers (Warman, 1971). There are many components of the LACoFD warehousing system to be reviewed, as there would be of any warehouse, Smith and Tompkins (1988) reported. Such an important evaluation must be carefully carried out in the LACoFD because reviews from the past have not necessarily resulted in positive change, particularly from the LACoFD customers' perspective (Schmidt & ten Hompel, 2007). As the LACoFD warehouse customers reported to the author, customer service and supply/equipment distribution has not really improved for many years. As Smith and Tompkins also stated, warehouse change

must be methodically considered and must be realistic and specific to the Department so as to result in noticeable improvement.

As with other organizational areas, problem solving for the LACoFD warehouse function is a formidable challenge (Blanding & Way, 1973). The author found that many LACoFD stakeholders felt outsourcing the warehouse function could be the answer to the warehouse-related problems. However, such an important function, with so many unique customer needs, cannot be easily outsourced to the Department's benefit and its desire for exceptional and consistent customer service (Schmidt & ten Hompel, 2007). As with other Department problem-solving efforts, the solutions to warehousing problems will not necessarily come easy (Blanding & Way). Outsourcing all or portions of the warehousing function is a major consideration that must be cost-effective and more beneficial than the existing process, otherwise it will be nothing but a failed change (Brewer et al., 2001).

Another common method of improving a warehouse function is the implementation of automation into the systems (Blanding & Way, 1973). The author found that automation may not be the only answer to LACoFD warehouse weaknesses. There are many consequences for the LACoFD, as well as other warehouse managers, to consider when contemplating task automation. The Department may benefit from automation if it is not so complex as to decrease warehouse productivity just for the sake of automation (Frazelle, 2002).

The author compared the warehouse operations of other agencies with that of the LACoFD, and saw areas where others' change related to staffing, procedures, warehouse stock items, and methodologies can improve the success levels of LACoFD warehouse productivity and customer service (Ghere, 2002). Additionally, through improved education of the LACoFD warehouse customers, the warehouse process can be enhanced (Chopra & Meindl, 2001).

The author's interviews with LACoFD stakeholders and with outside agency warehouse representatives confirmed the Literature Review by showing the importance of managerial support to the success of a warehouse function.

Emmett (2005) described a set of warehousing ideals which, to the author, seemed to be a set of aspirations for the LACoFD warehouse. That set of ideals included managerial support, flexibility, activity measures, effective and reasonable controls, housekeeping, operational planning, employee environment, minimal uncertainty, inventory accuracy and maintenance, professionalism, justified and beneficial automation, accountability, and, very importantly, customer awareness (Emmett). Through this research, the author found Emmett's ideals to be relevant to any warehouse function, and, in particular, to the LACoFD warehouse. As Powell (1976) and many other experts described, the myriad of problems which can weaken a warehouse function are not unique to the LACoFD warehouse. They can apply to any warehouse function depending on the organization of which the warehouse is a part and the goals of that organization (Powell). A warehouse has the basic mission of getting the right number of items in a timely manner to the right place at the appropriate cost (Schmidt & ten Hompel, 2007). This mission, too, belongs to the LACoFD warehouse, but carrying it out successfully is by no means an easily achieved accomplishment (Schmidt & ten Hompel).

Based on interviews with the other government agency warehouse managers, the author found that each organization was aspiring to make positive change to its warehouse operation. This change was related to the same types of desirable warehouse change mentioned repeatedly throughout the Literature Review. These managers felt the need to make improvements related to staffing, warehouse layout, staff training, and overall productivity. These changes were needed, they explained, even though other changes had just been made in recent years. As Ernst & Whinney (1985) reported, as the overall organization changes, so must its individual parts,

including, of course, its warehouse. Like the LACoFD warehouse, these outside agency managers found their warehouse to experience ongoing change. These agencies had experienced some of the same problems the LACoFD warehouse function had been through, but they had already solved some of those problems. Where these managers had not yet solved a problem, they were trying to work around it to meet their goals and/or at least reduce the effects of the problem on their organization. As such, ongoing change exists in these agencies, too.

The implications of this research to the LACoFD are many. If the warehouse function will be improved as a result of this research, there can be many positive changes. Improving the warehouse function will result in a more effective and prudent use of public funds, and the human resources spent on supply distribution and warehousing processes will be more productive and less costly. Additionally, processes and communication related to the warehouse will be streamlined which will improve employee productivity throughout the Department, including inside the warehouse. Improving the warehouse processes will not only benefit warehouse customers, but such will also affect the warehouse staff. An increase in productivity and morale amongst the warehouse staff will reduce Department warehouse costs through increased workforce efficiency. These improvements will effect more and better customer service, which in turn benefits the warehouse staff.

The result of the research will emphasize the importance of the warehouse function and improve its records and reporting, which benefits not only the warehouse function, but also its customers. As LACoFD will have a greater awareness of, and interest in, its warehouse function, it will want to see a return on its expanded investment in this vital Department function. This should equate to Department managers' review of productivity, as well as their exposure to success measurements which recount the benefits of a warehouse transformation. The intent of this successful research is to ensure the right people are working in the right areas of the

warehouse and doing their job in the most effective manner possible. It is important for the LACoFD to keep its warehouse in an important and appropriate perspective to ensure not only that warehouse-related decision making is as effectual as possible, but also that the Department presents appropriate solutions to warehouse problems.

To summarize, the author found that the LACoFD warehouse is experiencing some very “text book,” yet solvable, warehouse-related problems, each of which may have more than one feasible solution. The fact that there is no single solution to each of the warehouse dilemmas again shows how complex a warehousing operation can be, and how problem resolutions must be carefully chosen and implemented. The LACoFD needs to examine the mission of its warehouse, comparing it to that of the Department’s overall mission and taking into account not only its customer needs, but also the needs of the warehouse employees and the inherent complexity of a warehouse function (Powell, 1976; Schmidt & ten Hompel, 2007).

It is critically important for the LACoFD to recognize the proper role of the warehouse in the Department’s strategic planning efforts and that the warehouse function be appropriately and favorably integrated into the LACoFD organization as a beginning for change.

Recommendations

Based on the data collected and an analysis of that data, the results of this research have the potential to make significant, positive change to the LACoFD warehouse function and for benefiting the warehouse employees and their customers. Careful consideration of implementation plans for warehouse change will help ensure the future success of the warehouse and increase the quality of its customer service, productivity, and overall efficiency.

The following recommendations are made to the LACoFD to increase the overall effectiveness of the Department’s warehouse function.

- The Department should ensure managerial support of the warehouse function through its investment of appropriate time, funding, resources in the warehouse to encourage productivity and customer service excellence, as well as through the enforcement of warehouse policies and procedures which relate to warehouse employees and customers.
- In order to upgrade warehouse efficiency, the LACoFD should review the processes used to staff the warehouse to ensure the most appropriate personnel are assigned to the various workgroups in the warehouse, as well as to the warehouse-related purchasing groups.
- The Department should work with subject matter experts in the field of warehousing to review the LACoFD warehouse function, including the customer/employee recommendations garnered from this research (See Appendix F). During this review, potential areas of change such as warehouse staffing, outsourcing all or part of the warehouse function, and adding automation to the warehouse processes should be explored. This may mean investing financially in the warehouse function by hiring an outside consultant to provide expertise and an objective review of the overall warehouse process. In this way, Department managers can more fully integrate the warehouse appropriately into the LACoFD organization.
- The Los Angeles County purchasing guidelines and practices should be evaluated to ensure the LACoFD warehouse is benefiting as much as possible from vendor agreements and contracts to improve customer service and warehouse productivity through new product ordering, availability, and delivery methods.
- Through departmentwide marketing efforts and improvement of warehouse-related communication, provide education about existing and new warehouse procedures, policies, and services to all members of the LACoFD.

The LACoFD will realize many benefits by implementing the recommendations described above. These benefits will include improved employee productivity, a more effective

use of public funds, and enhanced customer service related to the warehouse. Additionally, the relationships between the warehouse and the rest of the Department will be optimized, which will result in more satisfied customers and warehouse employees.

In order to examine an organization's warehouse function, it is important for a future researcher to maintain his/her objectivity when interviewing the customers of the service, as well as those who provide the service. The result of this objectivity is to focus the findings and recommendations on core problems rather than only on input about symptoms or problems which may be emotionally based or otherwise biased in some manner. It would be ideal to be able to observe the warehouse function for a period of time to ensure problems, which may not be identified during interviews, can be discovered.

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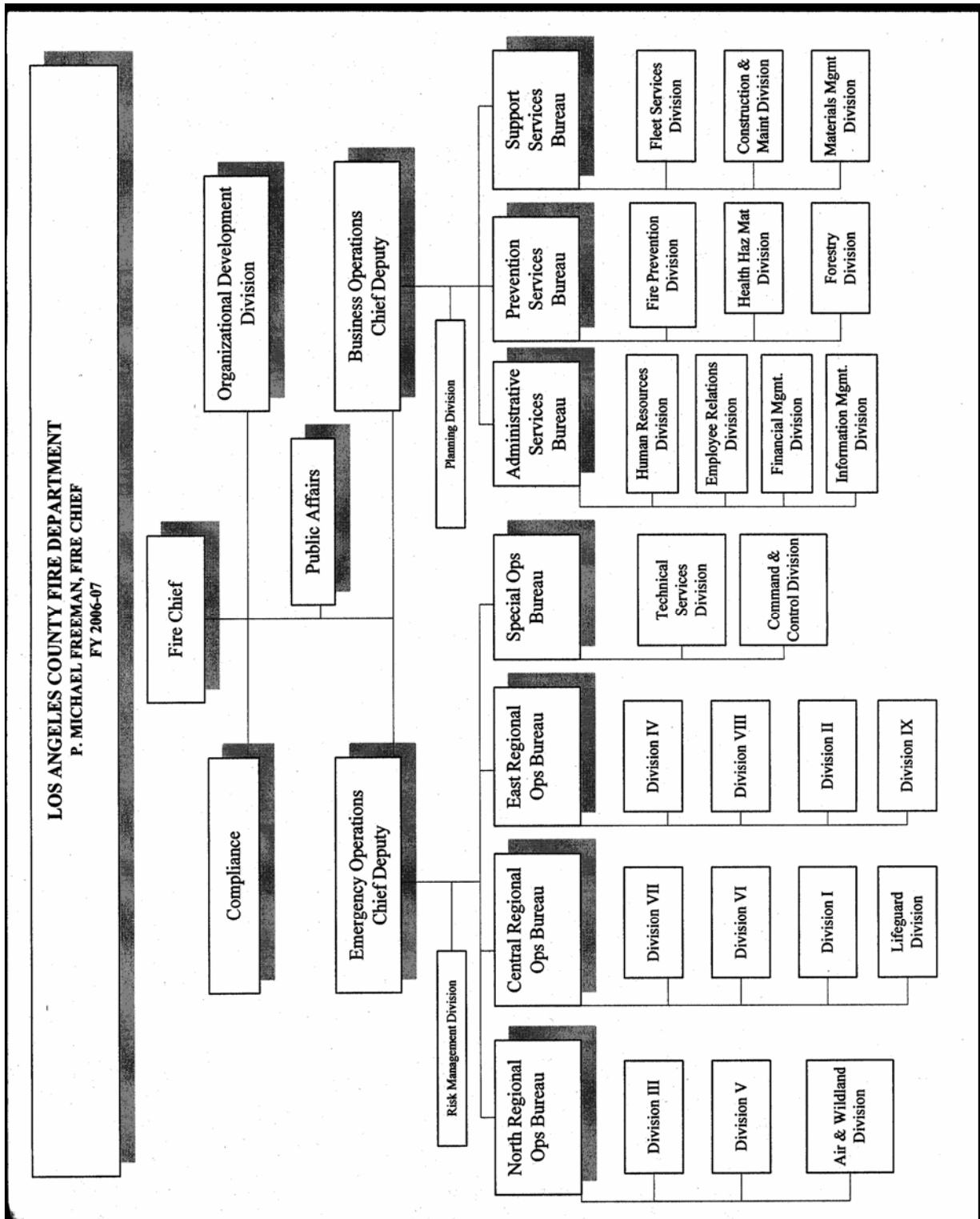
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Appendix A

Los Angeles County Fire Department
Organization Chart

Appendix B

Quantitative Aspects To Be Considered For Warehouse Evaluations

Quantitative Aspects To Be Considered When Evaluating Warehouse Systems

The Warehouse Management Handbook (p. 183)

Jerry D. Smith and James A. Tompkins (Editors in Chief) 1988

New York: McGraw-Hill Book Company

1. Ability to pace, or keep pace with, production requirements
2. Aesthetic considerations
3. Automatic weighing, counting, and verification capabilities
4. Availability of equipment needed
5. Availability of repair parts and/or contract maintenance services
6. Availability of trained operators
7. Avoidance of construction projects
8. Capability of handling less than unit loads
9. Compatibility with the materials handling operating organization
10. Cubic space (volume) utilization
11. Degree of automation desirable
12. Degree of inventory control afforded
13. Ease of future expansion of the handling methods
14. Ease of maintenance and rapidity of repair
15. Ease of supervision and control
16. Effect of natural condition: land, weather, and ambient temperature

17. Effect on in-process time
18. Empty-pallet handling systems and slave-pallet handling (dispensing)
19. Flexibility (ease of changing or rearranging the installed methods)
20. Frequency and seriousness of potential breakdowns
21. Increased systems productivity
22. Insuring of FIFO discipline
23. Integration with and ability to serve process operations
24. Integration with external storage facility
25. Interruption or disruption of production and related confusion during installation and start-up
26. Limitations imposed by the handling methods on the flexibility and ease of expansion of the layout and/or buildings
27. Personnel problems: availability of skilled workers, training capability, disposition of redundant workers, job description changes, union contracts, and work practices
28. Potential delays from required synchronization and peak loads
29. Promotional or public relations value
30. Quality of product and risk of damage to materials
31. Release of storage on manufacturing floor
32. Safety and housekeeping

33. Shrink wrapping, strapping, and load stabilization
34. Space utilization
35. Supporting services required
36. Tie-in with external transportation
37. Tie-in with scheduling, inventory control, and recordkeeping
38. Time required to get into operation: installation, training, and debugging
39. Versatility and adaptability of the handling methods to day-to-day fluctuation in products, quantities, and delivery times
40. Volume of spare parts required in stock
41. Working conditions and employee satisfaction

Appendix C

Discussion Questions For LACoFD Stakeholders

Discussion Questions for the MMD Chief and the Warehouse Manager

1. Describe the LACoFD warehouse function. What are its responsibilities? What role does it serve?
2. What is the advantage to having a central warehouse function? What are the disadvantages?
3. How does our warehouse function vary from other County department (e.g., Sheriff, Public Works) warehouse functions?
4. What drives the warehouse function decisions: Customer needs, time of year/season, item cost/size/popularity, warehousing activity, pricing/cost?
5. How have temporary managers and past “audits” affected the warehouse function?
6. Why has the LACoFD warehouse inventory value declined over the past several years?
7. Who decides what items are warehoused? How are those decisions made? How are inventory items added to or deleted from the warehouse stock?
8. Is “buying” for the warehouse done by the Department’s Procurement Section or by warehouse employees?
9. How does the performance of the LACoFD Procurement Section affect the warehouse function?
10. How does having purchases initially delivered to the warehouse help the LACoFD? How does this function affect the efficiency of the warehouse?
11. Do warehouse employees deliver supplies to its customers?
12. Is the on-line warehouse catalog system as automated as it should be?

13. How difficult is it to maintain the warehouse catalog? Is it only on-line?
14. Who is responsible for the success of the warehouse function? Why?
15. What challenges do you face in your role as a manager responsible for our warehouse function?
16. How does LACoFD management, outside of your Division, affect the success of the warehouse function?
17. Do you think warehouse employees have clear roles and sets of responsibilities?
18. How do County employee class specifications and salary levels affect the productivity of the warehouse function?
19. Have multiple employee work shifts for the warehouse ever been considered (a.m., p.m., weekends, etc.)?
20. How have computer-related tools helped or hindered the warehouse function (e.g., bar codes, inventory tracking, customer orders)?
21. How does the productivity of the warehouse function affect the overall operations of the LACoFD?
22. On a scale of 1 to 10, how successful is the warehouse function?
23. What are the warehouse function strengths? Weaknesses?
24. Is there inefficiency in the warehouse function?
25. What stifles the effectiveness of the warehouse function?
26. On a scale of 1 to 10, how do you believe the warehouse customers would rate the warehouse function?

27. How do LACoFD warehouse customers affect the effectiveness of the warehouse function? What is the responsibility of the warehouse customer for the success of the warehouse function?
28. If it needs improvement, how would you improve the warehouse function's customer service? Why?
29. If change is needed, what is the very first thing that needs to be done to change the warehouse function? Why?
30. If money was no object, what things would you do to improve the warehouse function?
31. In your role, how do you think you can affect the success of the warehouse function?
32. What feasible alternatives are there to the current warehouse function, if any?
33. Do you believe that outsourcing the warehouse would be a wise or poor choice?

Discussion Questions for Warehouse Employees

1. Describe the warehouse function. What are its responsibilities? What Department role does it serve?
2. Do you enjoy working at the warehouse? Why?
3. If you could work anywhere in the Fire Department, where would you want to work?
4. What made you choose to work at the Fire Department's warehouse?
5. What is the best thing about working at the warehouse?
6. What is the worst thing about working at the warehouse?
7. Who decides what items are warehoused?
8. How do you believe temporary managers and past "audits" have affected the warehouse function?
9. What's it like to have different/changing managers responsible for the warehouse?
10. How does having the on-line catalog help you in your job? How could it help you more?
11. How have other computer-related tools helped the warehouse function?
12. Do you have clear roles and sets of responsibilities?
13. What challenges do you face in your job as a warehouse employee?
14. Who is responsible for the success of the warehouse function? Why?
15. What are the strengths of the warehouse? Weaknesses?

16. On a scale of 1 to 10, how successful is the warehouse?
17. On a scale of 1 to 10, how do you think the warehouse customers would rate the warehouse?
18. What hurts the effectiveness of the warehouse function?
19. How does Department “management” affect the success of the warehouse?
20. How do warehouse customers affect the success of the warehouse?
21. How does the productivity of the warehouse affect the overall operation of the LACoFD?
22. If change is needed, what is the very first thing that needs to be done to change the warehouse function? Why?
23. If money was no object, what things would you do to improve the warehouse?
24. If you could, how would you improve warehouse customer service?

Discussion Questions for the LACoFD Chief Deputies

1. What LACoFD role does the warehouse serve?
2. What is the advantage to having a central warehouse function?
What are the disadvantages?
3. How have temporary managers and past “audits” affected the warehouse function?
4. Who has the responsibility for the success of the warehouse function? Why?
5. What challenges do you face in your role as a manager responsible for the LACoFD warehouse function?
6. How does Department management, outside of MMD, affect the success of the warehouse function?
7. Do you think warehouse employees have clear roles and sets of responsibilities?
8. How do County employee class specifications and salary levels affect the productivity of the warehouse function?
9. How does the productivity of the warehouse function affect the overall operations of the LACoFD?
10. On a scale of 1 to 10, how successful is the warehouse function?
11. What are the warehouse function strengths? Weaknesses?
12. Is there inefficiency in the warehouse function?
13. What stifles the effectiveness of the warehouse function?
14. On a scale of 1 to 10, how do you believe warehouse customers would rate the warehouse function?

15. How do warehouse customers affect the effectiveness of the warehouse?
What is the responsibility of the warehouse customers for the success of the warehouse function?
16. If it needs improvement, how would you improve the warehouse function's customer service?
17. If change is needed, what is the very first thing that needs to be done to change the warehouse function?
18. If money was no object, what things would you do to improve the warehouse function?
19. What feasible alternatives are there to the current warehouse function, if any?
20. Do you believe that outsourcing the warehouse would be a wise or poor choice?

Discussion Questions for Special Assignment Employees

1. What do you see as the purpose of our warehouse?
2. What is the advantage to having a central warehouse? What are the disadvantages?
3. Do you order supplies from our warehouse?
4. Is the on-line catalog system as automated as it should be? Why or why not?
5. How have past temporary managers and “audits” affected the effectiveness of the warehouse?
6. How does our warehouse vary from other County department (e.g., Sheriff, Public Works) warehouse functions?
7. Who is responsible for the success of the warehouse function? Why?
8. In your role, how do you think you can affect the effectiveness of the warehouse?
9. How does Department management, outside of MMD, affect the success of the warehouse function?
10. Do you think warehouse employees have clear roles and sets of responsibilities?
11. How do County employee class specifications and salary levels affect the productivity of the warehouse function?
12. Have multiple employee work shifts for the warehouse ever been considered (a.m., p.m., weekends, etc.)?
13. How have computer-related tools helped or hindered the warehouse function (e.g., bar codes, inventory tracking, customer orders)?

14. What is the responsibility of the warehouse customers for the success of the warehouse function?
15. How does the productivity/success of the warehouse function affect the overall operations of the LACoFD?
16. On a scale of 1 to 10, how successful is the warehouse function?
17. Where are the warehouse function strengths? Weaknesses?
18. Is there inefficiency in the warehouse function?
19. What stifles/damages the effectiveness of the warehouse function? Why?
20. On a scale of 1 to 10, how do you believe the warehouse customers would rate the warehouse function? Why?
21. If change is needed, what is the very first thing that needs to be done to change the warehouse function? Why?
22. If money was no object, what things would you do to improve the warehouse function? Why?
23. What feasible alternatives are there to the current warehouse function, if any?

Appendix D

Discussion Questions For LACoFD Warehouse Customers

Discussion Questions for LACoFD Warehouse Customers

1. What do you see as the responsibility of our supply warehouse?
2. What is the advantage to having our central warehouse? What are the disadvantages?
3. How do you or your staff process a warehouse order?
4. Do you use the on-line warehouse catalog? Why or why not? How would you improve the on-line catalog system?
5. How are your supplies received from the warehouse?
6. Who is responsible for the success of the warehouse function? Why?
7. Is there inefficiency in our warehouse function? If so, please describe examples.
8. On a scale of 1 to 10, how successful is the warehouse function?
9. Do warehouse customers affect the success of the warehouse? How?
10. In your role, how can you improve the effectiveness of the warehouse?
11. How does the success/failure of the warehouse affect the overall LACoFD operation?
12. How could warehouse customer service be improved?
13. If money was no object, what would you do to improve the warehouse function?
14. Are there any alternatives to the supply warehouse function?

Appendix E

Discussion Questions
For Outside Government Agencies**Discussion Questions for
Outside Government Agency Warehouse Managers**

1. Describe your warehouse function. Who are its customers?
2. What are the regular hours of operation of your warehouse?
3. How many people work in your warehouse?
4. How many sites/employees does your warehouse serve?
5. How do warehouse employee classifications and salary levels affect the effectiveness of your warehouse function?
6. Do your warehouse employees have clear roles and sets of responsibilities? Are written policies/procedures for their jobs made available to them?
7. Who decides what items are warehoused? How are those decisions made?
8. Is the “buying” for the warehouse done by warehouse employees or other employees?
9. Do you have a warehouse catalog for your customers’ use?
10. Are warehouse orders made in writing or electronically? Are order “approvals” made in writing or electronically?
11. How have computer-related tools helped or hindered your warehouse function?
12. Do warehouse employees deliver supplies to their customers? How do the customers receive their warehouse items?
13. Who in your organization is responsible for the success of the warehouse function?

14. On a scale of 1 to 10, how successful is your warehouse function?
15. Where are your warehouse function strengths? Weaknesses?
16. What challenges do you face in your role as a manager responsible for your warehouse function?
17. In your role, how do you think you can improve the effectiveness of your warehouse function?
18. On a scale of 1 to 10, how do you think your warehouse customers would rate your warehouse?
19. How do warehouse customers affect the productivity of the warehouse function?
20. How does the failure or success of your warehouse function affect the overall operations of your agency?
21. If it needs improvement, how would you improve your warehouse function's customer service?
22. If money was no object, what things would you do to improve your warehouse function?
23. What feasible alternatives are there to your current warehouse function, if any?

Appendix F

LACoFD Warehouse Function Improvement Recommendations

**LACoFD Warehouse Function Improvements
As Recommended By Warehouse Customers and Employees**

1. On-line ordering/approval system
2. Updating and consistent maintenance of the warehouse stock catalog
3. Pre-established supply order amounts/frequencies for designated supplies (i.e., Push Ordering)
4. Regionalized warehouse facilities throughout the LACoFD jurisdiction
5. Education of the warehouse customers/employees about the warehousing requirements/processes and customer needs
6. Improved warehouse expenditure reporting
7. Establishment of a warehouse Customer Help Desk (e.g., designating warehouse representatives to work with designated customers by Bureau or supply category)
8. Formalized role for the warehouse stock subject matter experts
9. Review of the warehouse function of other similar agencies
10. Review of the appropriateness of the warehouse space utilization and the overall size of the warehouse
11. Updates and/or supplement to the warehouse Maximo inventory system
12. Air Operations Section facility designated as a unique receiving site
13. Evaluation of the warehouse stock (i.e., determination of stock items and, stock limitations by item type)
14. Issuance of credit cards to designated managers to be used in place of ordering designated supplies from the warehouse

15. Establishment of the online office supply process at additional LACoFD administrative sites
16. Direct supply shipments from vendors to administrative sites rather than to the warehouse
17. Monthly or bi-monthly customer ordering and supply pickups
18. LACoFD “Ship-To Codes” which more closely correspond to the fire station numbering system
19. Review of the appropriateness of the warehouse-related staffing, including the purchasing staff (e.g., level of and number of staff members)
20. Assignment of a sworn employee to the warehouse as a co-manager
21. Improvement of the warehouse work environment and facilities (i.e., lighting, furniture, restrooms, equipment, etc.)
22. Evaluation of the back order problem, and through education, improve procedures and policies to limit back-ordered items
23. Use of bar coding on warehouse stock items
24. A more formal process for ordering/approving warehouse requisitions for use by customers and warehouse employees
25. Supply orders from field battalions rather than from each fire station
26. Review of the warehouse internal controls for relevance and feasibility
27. Outsourcing all or part of the central warehouse function
28. Automating warehouse functions through process and/or equipment change